4.7 AIR QUALITY

4.7.1 Existing Conditions

This section describes existing air quality conditions. The regulatory setting for air quality includes applicable federal, state, and local regulations as described below.

Federal and State Clean Air Acts

EPA is responsible for enforcing the Federal Clean Air Act of 1970 and its 1977 and 1990 Amendments. The Federal Clean Air Act establishes National Ambient Air Quality Standards (NAAQS) for the protection of human health and public welfare for six "criteria" pollutants: ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), and particulate matter less than 10 microns in diameter (PM_{10}). NAAQS represents the maximum levels of background pollution considered safe, with an adequate margin of safety, to protect the public health and welfare. These standards are shown in Table 4.7-1. These standards may not be exceeded more than once per year for an area to be considered in attainment of the NAAQS.

The Federal Clean Air Act allows states to adopt ambient air quality standards and other regulations provided they are at least as stringent as federal standards. The California Clean Air Act of 1988 established California State Ambient Air Quality Standards (CAAQS) for criteria pollutants and additional standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility reducing particles, which are also shown in Table 4.7-1. The California Air Resources Board is the state regulatory agency with authority to enforce regulations to achieve and maintain the CAAQS, except in areas where the local air quality management district has been given authority over stationary source emissions. The California Air Resources Board policy for determining violations of a state standard is a "not to be exceeded" policy for O_3, CO, SO_2 (1-hour), NO_2, and PM_{10}. The remaining standards are not to be equaled or exceeded.

The Clean Air Act Amendments of 1990 established new deadlines for achievement of the NAAQS depending on the severity of nonattainment. The San Diego Air Basin is classified as serious for ozone nonattainment and moderate for carbon monoxide nonattainment. In accordance with the Clean Air Act, the air basin has until November 15, 1999, to achieve attainment with the federal ozone standard. Ozone is not emitted from emission sources

Table 4.7-1

CALIFORNIA AND FEDERAL AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGING TIME	CALIFORNIA STANDARDS (1)		NATIONAL STANDARDS (2)		
		Concentration	Method	Primary	Secondary	Method
Ozone	1 Hour	0.09 ppm (180 ug/m^3)	Ultraviolet Photometry	0.12 ppm (235 ug/m^3)	Same as Primary Standards	Ethylene Chemiluminescence
Carbon Monoxide	8 Hour	9.0 ppm (10 mg/m^3)	Nondispersive Infrared Spectroscopy	9.0 ppm (10 mg/m^3)	Same as Primary Standards	Nondispersive Infrared Spectroscopy
	1 Hour	20 ppm (23 mg/m^3)		35 ppm (45 mg/m^3)		
Nitrogen Dioxide	Annual Average	—	Gas Phase Chemiluminescence	0.053 ppm (100 ug/m^3)	Same as Primary Standards	Gas Phase Chemiluminescence
	1 Hour	0.25 ppm (470 ug/m^3)		—		
Sulfur Dioxide	Annual Average	—	Ultraviolet Fluorescence	0.03 ppm (80 ug/m^3)	—	Pararosaniline
	24 Hour	0.05 ppm (131 ug/m^3)		0.14 ppm	—	
	3 Hour	—		—	0.5 ppm (1300 ug/m^3)	
	1 Hour	0.25 ppm (655 ug/m^3)		—		
Suspended Particulate Matter	Annual Geometric Mean	PM$_{10}$ 30 ug/m^3	Size Selective High Volume Sampler and Gravimetric Analysis	PM$_{10}$ (3) 50 ug/m^3	Same as Primary Standards	Inertial Separation and Gravimetric Analysis
	24 Hour	PM$_{10}$ 50 ug/m^3		PM$_{10}$ (3) 150 ug/m^3		
Sulfates	24 Hour	25 ug/m^3	Turbidimetric Barium Sulfate	—	—	—
Lead	30 Day Average	1.5 ug/m^3	Atomic Absorption	—	—	Atomic Absorption
	Calendar Quarter	—		15 ug/m^3	Same as Primary Standards	
Hydrogen Sulfide	1 Hour	0.03 ppm (42 ug/m^3)	Cadmium Hydroxide Stracan	—	—	—
Vinyl Chloride (chloroethene)	24 Hour	0.010 ppm (26 ug/m^3)	Tedlar Bag Collection, Gas Chromatography	—	—	—
Visibility Reducing Particles	1 Observation	Insufficient amount to reduce the prevailing visibility to less than 10 miles when the relative humidity is less than 70%		—	—	—

ppm – parts per million
ug/m^3 – micrograms per cubic meter
mg/m^3 – milligrams per cubic meter

(1) CO, SO_2 (1 Hour), NO_2, O_3, and PM$_{10}$ Standards are not to be exceeded. All other Standards are not to be equaled or exceeded.
(2) Not to be exceeded more than once a year, with the exception of the O_3 standard and the annual standards.
(3) Annual arithmetic mean.

within the air basin, but is formed through a complex set of chemical reactions of ozone "precursors," which include reactive organic gases (ROG) and oxides of nitrogen (NOx). The nitrogen oxides include NO_2, for which a separate standard exists. Therefore, in order to achieve attainment of the ozone standard, emissions of ROG and NOx are regulated. The Clean Air Act also requires the air basin to implement the following measures:

- Reduce ozone precursor emissions (i.e., ROG and NOx) by 15 percent per year during the first 6 years of the program, and by 13 percent per year during the seventh through ninth years of the program.

- Submit a State Implementation Plan that shows, on the basis of photochemical grid modeling, how the air basin will meet the NAAQS.

- Adopt measures such as inspection and maintenance programs, clean fuels programs, and transportation control measures to reduce emissions from mobile sources.

- Regulate sources that emit more than 50 tons per year of ozone precursors.

- Require a 1.2:1 offset ratio for new sources.

State Implementation Plan

In 1979, the EPA required each state to prepare a State Implementation Plan (SIP), which describes how the state will achieve compliance with the NAAQS. A SIP is a compilation of goals, strategies, schedules, and enforcement actions that will lead the state (including the San Diego Air Basin) into compliance with all federal air quality standards. Every change in compliance schedule or plan must be incorporated into the SIP. The Clean Air Act Amendments of 1990 established new deadlines for achievement of the NAAQS depending on the severity of nonattainment. The San Diego Air Basin is classified by EPA as serious nonattainment for ozone and a moderate nonattainment area for carbon monoxide. Therefore, the San Diego Air Basin's portion of the SIP deals with the air basin's strategies for achieving the federal ozone and carbon monoxide standards. The revised SIP for the San Diego Air Basin was submitted to the EPA in November 1994.

Regional Air Quality Strategy

To meet federal air quality standards in California, the Air Resources Board (ARB) requires each air basin to develop its own strategy for achieving the NAAQS. The original Regional Air Quality Strategy (RAQS) for San Diego County (SDAPCD 1992) was developed for inclusion in the SIP in the early 1970s and was updated in 1979 and 1982. Responsibility for preparation of the county's RAQS and its revisions has been delegated to the San Diego County Air Pollution Control District (APCD), which is also responsible for pollution control from stationary sources, air pollution monitoring, emissions inventories, meteorological and air quality analyses, implementation of abatement plans in event of severe smog problems, and smog episode forecasts. The California Clean Air Act (CCAA) calls for each district in the state to comply with state air quality standards by the earliest practicable date. The CCAA further requires each district to develop an air quality management plan. The 1991 management plan (called the 1991 RAQS) for San Diego County was adopted in August 1992. While provisions contained in the 1991 RAQS generally meet federal requirements (in addition to those of the California Clean Air Act), the San Diego County APCD submitted a revised SIP in November 15, 1994, to address unique federal mandates.

The goal of the 1991 RAQS is to reduce local pollutant emissions such that state air quality standards are achieved as expeditiously as possible. The CCAA's main requirement is a 5 percent per year reduction in emissions. In San Diego County, where significant emissions reduction programs are already in place, it is not anticipated that this level of annual emissions reductions can be achieved. Consequently, the CCAA requires that all feasible measures be implemented on a practical, expeditious schedule. These measures, identified in the RAQS, include the following:

- Clean Fuel Vehicles: This measure is designed to increase the use of low emission motor vehicles in fleets.

- Stationary and Areawide Control Measures: These emission control measures would affect a wide variety of sources ranging from specific industries such as electrical power generation, fiberglass manufacturing, and bakeries, to consumer products such as barbecue lighter fluid and deodorants.

- Transportation Control Measures: These measure include trip reduction programs. alternative transportation mode capacity expansion. transportation system management. indirect source review. and land use.

It should be noted that the 1991 RAQS does not estimate when or if attainment of the state standards would be achieved; research is currently being conducted to provide data for this attainment demonstration. However. it is not anticipated that San Diego County would meet the standards by 1997. The failure of earlier versions of the RAQS to meet federal or state standards can be attributed to several factors, the principal one being population growth (and with it, growth in vehicular travel) higher than that predicted by San Diego County Association of Governments' (SANDAG) growth forecasts. The County's emission trend forecasts are based on the SANDAG Series 7 growth forecasts. SANDAG's current adopted forecast (Series 7) projects a San Diego County population of 2,585,134 in 1995. However, by the end of 1990, the actual population was already very close (2,498,016) to the 1995 projection. Estimates of emission trends and control technique effectiveness contained in the RAQS would clearly be incorrect, if the Series 7 forecasts on which they are based underestimated population growth in the county. Nonetheless, since the RAQS is based on the Series 7 forecast, significance of impacts is defined by the SDAPCD in terms of whether or not the growth induced by a particular development project has been accounted for in the Series 7 forecast.

Meteorology/Climate

The climate of San Diego County is characterized by warm. dry summers and mild, wet winters and is dominated by a semi-permanent high pressure cell located over the Pacific Ocean. This high pressure cell maintains clear skies for much of the year. It also drives the dominant onshore circulation and helps to create two types of temperature inversions, subsidence and radiation, that contribute to local air quality degradation.

Subsidence inversions occur during the warmer months, as descending air associated with the Pacific high-pressure cell comes into contact with cool marine air. The boundary between the two layers of air represents a temperature inversion which traps pollutants below it. Radiation inversion typically develops on winter nights, when air near the ground cools by radiation, and the air aloft remains warm. A shallow inversion layer which can trap pollutants is formed between the two layers.

The nearest meteorological station is located in the City of Escondido, which is located 5 miles north of the project area, where the mean high and low temperatures are 75°F and 48°F, respectively. Precipitation in the study area averages 14 inches annually; 90 percent of which falls between November and April. The prevailing wind direction is from the west-northwest, with an annual mean speed of 8.9 miles per hour (NOAA). Sunshine is usually plentiful in the Santa Fe Valley SPA area but night and morning cloudiness is common during the spring and summer. Fog can occur occasionally during the winter.

Ambient Air Quality

The proposed project area is within the San Diego Air Basin (SDAB). Air quality at a given location is a function of several factors, including the amounts and types of pollutants being emitted, both locally and regionally, and the dispersion rates of pollutants within the region. The major factors affecting pollutant dispersion are wind speed and direction, atmospheric stability, temperature, the presence or absence of inversions and the topographic and geographic features of the region.

The closest APCD air quality monitoring station is located at Valley Park in Escondido, approximately 5 miles north of the study area. San Diego County meets the federal and state standards for all pollutants except the California PM10 and 1-hour NO_2 air quality standards and the federal and state O_3 standards. The SDAPCD Escondido air quality monitoring station monitors O_3, CO, NO_2, SO_2, and PM_{10}. Table 4.7-2 presents a summary of the highest pollutant values recorded at this station in the last 5 years. Because of the topographic location and strong temperature inversions that occurs in Escondido, pollutants in the San Diego Air Basin are transported inland, and elevated levels have been observed at the Escondido monitoring station. It should be noted that the City of Escondido is heavily urbanized. Consequently, many pollutant values shown in Table 4.7-2 are probably higher then what would be observed if there was a monitoring station in the Santa Fe Valley area.

Ozone. As shown on Table 4.7-2, the federal O_3 standard was violated during 9 days in 1989, 8 days in 1990, 7 days in 1991, 6 days in 1992, and 1 day in 1993 at the Escondido monitoring station. However, the state O_3 standards was exceeded 40 days in 1989, 26 days in 1990, 27 days in 1991, 25 days in 1992, and 16 days in 1993. According to San Diego APCD, O_3 levels are high when emissions generated in the South Coast Air Basin to the north of San Diego County (i.e., LA and Orange Counties) are transported under

Table 4.7-2

AMBIENT AIR QUALITY SUMMARY
ESCONDIDO MONITORING STATION

Pollutant	Average Time	California Air Quality Standards	Federal Primary Standards	Maximum Concentrations (a)					Number of Days Exceeding Federal Standard (b)					Number of Days Exceeding State Standard (b)				
				1989	1990	1991	1992	1993	1989	1990	1991	1992	1993	1989	1990	1991	1992	1993
Oxidants (Ozone)	1 hr	0.09 ppm	0.12 ppm	0.19	0.17	0.21	0.15	0.15	9	8	7	6	1	40	26	27	25	16
Carbon Monoxide	1 hr	20 ppm	35 ppm	17.0	18.0	12.0	14.0	11.0	0	0	0	0	0	0	0	0	0	0
	8 hrs	9.0 ppm	9 ppm	10.0	8.8	7.9	7.3	7.5	5	0	0	0	0	5	0	0	0	0
Nitrogen Dioxide	1 hr	0.25 ppm	N/A	0.19	0.16	0.14	0.13	0.13	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0
	Annual	N/A	0.053 ppm	0.031	0.029	0.029	0.026	0.24	0	0	0	0	0	N/A	N/A	N/A	N/A	N/A
Sulfur Dioxide	1 hr	0.25 ppm	N/A	0.03	0.03	0.07	0.02	0.02	N/A	N/A	N/A	N/A	N/A	0	0	0	0	0
	24 hrs	0.05 ppm	0.14 ppm	0.013	0.013	0.015	0.013	0.012	0	0	0	0	0	0	0	0	0	0
	Annual	N/A	0.03 ppm	0.002	0.002	0.003	0.004	0.001	0	0	0	0	0	N/A	N/A	N/A	N/A	N/A
PM_{10}(c)	24 hrs	50 $\mu g/m^3$	150 $\mu g/m^3$	N/A	N/A	N/A	N/A	96	0	0	0	0	0	0	0	0	0	3
	Annual	30 $\mu g/m^3$	50 $\mu g/m^3$	N/A	N/A	N/A	N/A	32.5	0	0	0	0	0	0	0	0	0	1

Source: San Diego County APCD and California Air Resources Board, 1989, 1990, 1991, 1992, 1993.

Notes:

(a) Maximum concentration units for ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide are parts per million (ppm). Concentration units for PM_{10} are micrograms per cubic meter ($\mu g/m^3$)
(b) For annual standards, a value of 1 indicates the standard has been exceeded.
(c) PM_{10} (fine particulate matter less than 10 microns) was not monitored at this station during the years 1989 to 1992.

certain meteorological conditions to the San Diego Air Basin. The San Diego Air Basin may achieve attainment only when the South Coast Air Basin achieves the NAAQS. Based on the latest Air Quality Management Plan (AQMP) developed for the South Coast Air Basin (SCAQMD 1991) attainment of O_3 standards is expected to occur by the year 2010.

When reviewing violations of O3 levels, it is important to consider emissions of reactive organic gas (ROG) and oxide of nitrogen (NOx), both precursors to O_3. Approximately 40 percent of O_3 precursors emissions come from motor vehicles and 60 percent are emitted from stationary sources, such as power plants (SDAPCD 1989). Emissions of ROG and NOx have been significantly reduced in recent years as a result of pollution controls on industry and motor vehicles.

Carbon Monoxide. Federal and state standards for CO were exceeded 5 days in year 1989 at Escondido. As in most urban areas, high short-term concentrations of CO, known as "hot spots", can be a problem in San Diego County. Hot spots typically occur in areas of high motor vehicle use, such as in parking lots and along highways. Since CO build-up typically occurs at locations where traffic is congested, CO concentration are often correlated with levels of service at intersections. Significant concentrations of CO sometimes occur (depending on temperature, wind speed, and other variables) at intersections where levels of service (LOS) is rated at D or worse (Caltrans 1988).

Other Pollutants. Three other pollutants are monitored extensively throughout the San Diego Air Basin: NO_2, SO_2, and PM_{10}. The NAAQS for NO_2 have not been exceeded since 1981, and the levels of SO_2 have been well below the NAAQS for many years. However, NO_2 is important as it is also a component in the formation of ozone. The California Air Resources Board and the EPA have both recognized that PM_{10}, especially particulates that have an aerodynamic diameter less than 10 microns, which are considered to be respirable, are a good indicator of potential health effects of airborne dust exposure.

Health Effects of Air Pollutants

Air pollutants are recognized to have a variety of health effects on humans. Research by the California Air Resources Board shows that exposure to high concentrations of air pollutants can trigger respiratory diseases, such as asthma, bronchitis, and other respiratory ailments; and cardiovascular diseases. A healthy person exposed to high concentrations of air pollutants may be become nauseated or dizzy, may develop a headache or cough, or

may experience eye irritation and/or a burning sensation in the chest. Ozone is a powerful irritant that attacks the respiratory system, leading to the damage of lung tissue. Inhaled PM, NO_2, and SO_2 can directly irritate the respiratory tract, constrict airways, and interfere with the mucous lining of the airways. Exposure to CO, when absorbed into the bloodstream, can endanger the hemoglobin, the oxygen-carrying protein in blood, by reducing the amount of oxygen which reaches the heart, brain, and other body tissues. When air pollutants levels are high, a common occurrence in southern California, children, elderly, and people with respiratory problems are advised to remain indoors. Outdoor exercise also is discouraged because strenuous activity may cause shortness of breath and chest pains.

4.7.2 Specific Plan Area Impacts

The air quality analysis presented in this section addressed potential local and regional effects from construction sources, residential sources, and vehicular travel that can be expected as a result of the proposed project (i.e., from uses such as the proposed resort and golf courses).

The following discussion assesses potential air quality impacts from both short-term and long-term perspectives. Short-term impacts are related to emissions produced during grading and building construction, and typically involve an increase in dust (suspended particulates) and equipment and vehicle exhaust. Direct long-term impacts are related to emissions produced by vehicle trips and small stationary source emissions associated with residential and light commercial units.

Criteria for Significance Determination

Although the San Diego APCD has not developed any guidelines for evaluating the significance of air quality impacts for proposed projects undergoing CEQA review, the APCD has established air pollutant emission limits which, when exceeded, indicate that a source may have an impact on ambient air quality. Major sources exceeding the emission limits set forth under Regulation 20 of the San Diego APCD Rules and Regulations (SDAPCD 1994) require the performance of an Air Quality Impact Analysis to evaluate whether the source impacts the ambient air quality. For the purpose of establishing significance criteria for evaluating whether a proposed project will have an adverse impact on air quality, any increase above the major source threshold would be expected to have an

adverse impact on air quality because any emission increase would contribute to the air quality problem in the air basin. Therefore, any project would be considered to have a potential significant air quality impact if the emission levels from the proposed project were to exceed any of the following:

Pollutant	Pounds per Day
CO	550
SO_x	250
ROG	250
NO_x	250
PM_{10}	100

Construction Emissions

Short-term impacts to localized air quality would result from construction of the proposed project. These impacts would result from fugitive dust generated by clearing and grading activities and from tailpipe emissions caused by construction equipment and vehicles. Activities associated with construction of the project would produce air pollutants in the form of exhaust emissions from construction vehicles and equipment. These construction impacts depend on the number of workers, number and types of heavy duty vehicles and equipment, and length of time over which these activities occur. Estimates of construction impacts are evaluated quantitatively for this proposed project. A discussion of construction impacts is provided below.

Exhaust emissions from construction activities include those associated with the transport of workers and machinery to the site, as well as those produced onsite by construction equipment. The numbers and types of construction that will be operating during the construction period is unknown at this time because of the lack of specific construction equipment information. Construction equipment emissions were estimated by using a fleet mix of equipment from other similar projects. A mixture of construction equipment, loaders, trucks, scrapers, backhoes, water trucks, pavers, compactors, generators, and bulldozers are assumed to be used during construction activities. It can be anticipated that most of the heavy duty equipment will be powered by diesel fuel. In general, diesel-powered equipment emits more NO_x, SO_x, and PM_{10} than gasoline-powered equipment. The latter, however, emits more hydrocarbons and CO. When the equipment is initially started, some visible emissions and possibly odorous emissions can be expected.

Emissions of construction equipment were estimated using the emission factors for heavy equipment from the EPA's AP-42 Compilation of Air Pollutants Emission Factors (EPA 1985). For the purposes of the worst-case emission analysis, it is assumed that two of each equipment type would be used during 8 hours on a peak day period. The list of equipment that may be used for the construction of the proposed Santa Fe Valley project and the estimated peak daily emissions are presented in Table 4.7-3. The worst-case emission analysis showed that NOx emission would exceed the significance criteria of 250 pounds per day for NO_x. Therefore, the impacts are considered to be significant.

Construction activities are also a source of fugitive dust emissions that may have a substantial, but temporary, impact on local air quality. These emissions are associated with land clearing, grading, and construction of new roads, residential units, schools, fire station, golf clubhouse, and small retail stores. Substantial dust emissions also occur when vehicles travel on paved and unpaved surfaces and when haul trucks lose material. Dust emissions and impacts vary substantially from day to day, depending on the level of activity, the specific operation being conducted, and the prevailing meteorological conditions. Wet dust suppression techniques, such as watering and applying chemical stabilization, can be used during construction to prevent (or suppress) the fine particulate from leaving the surface and becoming airborne through the action of mechanical disturbance or wind.

Fugitive dust may adversely affect sensitive receptors, i.e., people who are more susceptible to the adverse impact of air pollutants. These include the elderly, young children, and those individuals suffering from respiratory disorders. Although most dust is readily filtered by human breathing passages, tiny particles can easily bypass this natural filtering system and lodge deep in the lungs. Large-diameter dust, which settles out on nearby foliage and other surfaces, is more a soiling nuisance than a potential health impact. Areas near the construction site would be the most susceptible to this nuisance from construction activities.

These activities have the potential to generate airborne dust. Fugitive dust generation from heavy construction activities is commonly estimated at 1.2 tons per acre per month of activity. A control efficiency of 50 percent was assumed to be achieved by onsite watering, which reduces the effective emission factor to 0.6 tons per acre per month of activity (EPA 1985). The total area to be disturbed is estimated to be 1,736 acres, while the length of the

Table 4.7-3

ESTIMATED CONSTRUCTION EQUIPMENT EXHAUST EMISSIONS (POUNDS PER DAY)

Equipment	Rated Horsepower	Load Factor	Emissions Factors					Emissions Rates				
			NO_x	CO	ROG	SO_2	PM_{10}	NO_x	CO	ROG	SO_2	PM_{10}
Generators	50	0.7	14.00	3.00	1.06	0.80	1.00	17.28	3.70	1.31	0.99	1.23
Loaders	200	0.6	8.81	2.71	0.92	0.85	0.81	37.29	11.47	3.89	3.60	3.43
Dozers	300	0.6	7.81	2.15	0.71	0.85	0.69	49.59	13.65	4.51	5.40	4.38
Scrapers	200	0.5	7.46	2.45	0.52	0.90	0.79	26.31	8.64	1.83	3.17	2.79
Trucks	300	0.5	8.15	2.28	0.35	0.89	0.50	43.12	12.06	1.85	4.71	2.65
Water Trucks	285	0.5	8.15	2.28	0.35	0.89	0.50	40.97	11.46	1.76	4.47	2.51
Pavers	190	0.5	13.05	6.03	0.97	1.00	0.78	43.73	20.21	3.25	3.35	2.61
Compactors	100	0.5	11.01	4.60	0.96	0.93	0.90	19.42	8.11	1.69	1.64	1.59
Backhoes	55	0.6	11.01	4.60	0.96	0.93	0.90	12.82	5.35	1.12	1.08	1.05
Total								290.53	94.65	21.21	28.41	22.24
Significance Threshold								250.00	550.00	250.00	250.00	100.00
Exceedance								yes	no	no	no	no

Source: Environmental Protection Agency AP-42 Compilation of Air Pollutants Emissions Factors

3-phased construction period is estimated at 96 months over a 15 year period. Using these assumptions, the average monthly fugitive dust emission are estimated to be 3.62 tons per month, with approximately half in the form of PM_{10} (approximately 120 pounds per day). PM_{10} emission would exceed the significance criteria of 100 pound per day for PM_{10}. Therefore the impact is considered significant. Fugitive dust impacts from construction tend to be more localized and somewhat more easily controlled than those of other sources, such as vehicular emissions. However, they can be a considerable nuisance unless appropriate control measures are taken.

Vehicular Emissions

Motor vehicles are the primary source of emissions associated with residential and some commercial land uses. Typically those land uses do not directly emit significant amount of air pollutants from onsite activities. Vehicular trips to and from these land uses do however, emit pollutants. The proposed project would generate new vehicular traffic. It is important to note that O_3 is the most serious pollutant problem in the region. The continuous generation of O_3 precursors (ROG and NO_x) emissions into the air basin is likely to make compliance with state and federal air quality standards more difficult to achieve. The proposed project is expected to generate 22,060 daily trips (Kimley-Horn and Associates, 1995). It is possible to predict that an increase in the number of new daily vehicle trips will mean an increase of commuters to travel more miles to their destination. In order to determine the amount of vehicular emissions that would attributed by the proposed project, emission estimates for vehicles were prepared using the EMFAC7F vehicle emission factors model. EMFAC7F was developed by California Air Resources Board to estimate the amount of pollutants emitted per mile driven for various types of vehicles. An estimate of the emissions associated with vehicular traffic generated by Santa Fe Valley SPA is presented in Table 4.7-4.

In addition to vehicle emissions estimated through the EMFAC7F model, it is necessary to consider the potential for CO "hot spots" at locations where traffic is congested. The idling of vehicles at intersections is the cause for CO buildup or "hot spots". Because CO concentrations are correlated with LOS at intersections, significant CO concentrations are most likely to occur where an intersection's LOS is rated at D or worse (Caltrans 1988).

The implementation of the Santa Fe Valley SPA is consistent with the land use assumptions contained in the RAQS, therefore no significant impact to applicable regional plans would occur.

With the implementation of mitigation measures in Section 4.7.4, all impacts to air quality will be mitigated.

4.7.4 Mitigation Measures

Because the proposed project is deemed significant in accordance with the San Diego APCD Regulation 20 significant threshold criteria, mitigation measures are required. Mitigation measures are used to help offset the expected air quality impacts of the proposed project. However, because of the nature of the project, mitigation for air quality impacts is limited primarily to minimizing emissions from construction activities and reducing, to the extent practical, the impact from vehicular traffic. These mitigation measures focus primarily on reducing NO_x, CO, and PM_{10} emissions since these are largely the sources of the air quality impacts. Other commonly required mitigation measures are also described.

Construction Mitigation Measures. Emissions from construction activities, which are localized and short-term, could be mitigated using appropriate control measures. The phasing of the various construction projects would be beneficial in terms of reducing concurrent emissions from construction activities. The applicant shall use combinations of the following techniques to reduce potentially significant construction emission during project construction:

- Simultaneous operation of multiple construction equipment units shall be minimized.
- Grade only those areas that will be developed in the immediate future.
- Low pollutant-emitting construction equipment shall be used.
- Caterpillar prechamber diesel engines (or equivalent) shall be used together with proper maintenance and operation to reduce emissions of oxides of nitrogen (NOx).

would primarily result from natural gas burning and electrical usage. Water heaters and gas-fired appliances emit mainly NO_x, although smaller quantities of other pollutants such as ROG, CO, SO_2, and PM_{10} are also produced. Electrical appliances and air conditioners have no direct emissions of air pollutants. However, these units do increase energy demand from power generating facilities, which contribute to the regional air pollution background. For the purpose of this analysis, all units were assumed to be equipped with electrical appliances. Emission rates for regulated pollutants were determined by using the emission factor approach in the South Coast Air Quality Management District's CEQA Air Quality Handbook (SCAQMD 1993). The results of pollutants emissions estimates for the proposed project are presented in Table 4.7-4. The emission of pollutants associated with the proposed sources are negligible, but will incrementally contribute additional pollutants to the regional air quality.

Consistency with Applicable Regional Plans

The SANDAG Series 7 growth projections were derived from land density assumptions contained in the General Plans and associated Community Plans existing throughout the County of San Diego at the time Series 7 was being prepared. These San Dieguito Community Plan (SDCP). The SDCP included the Santa Fe Valley SPA with a density of 0.4 dwelling units per acre. Since the Santa Fe Valley SPA was assumed in the SANDAG Series 7 growth forecast, the growth assumptions under this Specific Plan is consistent with assumptions in the RAQS, and impacts are considered to be not significant.

4.7.3 Level of Significance

Air quality in the proposed project area would be adversely affected by construction emissions, because the fugitive dust (PM_{10}) and exhaust (NO_x) emissions generated from construction activity would slightly exceed the significance threshold level. The construction impacts will be temporary and control measures will be used, as appropriate.

On a long-term basis, vehicle emissions are the most significant sources of air pollution. The estimated emissions from vehicles associated with trips to and from the proposed project showed a net increase in CO pollutants. The estimated small stationary source emissions are negligible, however, the overall impact would result in a net increase in CO emissions, as shown in Table 4.7-4. The results show that the air quality impacts would not be significant.

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- Electrical construction equipment shall be used when feasible.

- Water trucks or sprinkler systems shall be used to reduce airborne onsite dust. Watering frequency shall be increased whenever wind speeds exceed 15 mph.

- All dirt stock-pile areas shall be watered daily or as needed.

- All disturbed soil areas not subject to revegetation shall be stabilized using approved chemical soil binders, jute netting, or other methods as appropriate.

- The paving of all roadways shall be completed as soon as possible after grading.

Vehicle Mitigation Measures. Because projections of future air quality levels in the project area indicate the likelihood that CO standards will be exceeded, mitigation measures are recommended to reduce vehicular emissions by promoting the use of alternative transportation methods. The project applicants shall coordinate with appropriate agencies (SANDAG, North County Transportation District (NCTD), other transportation authorities) to implement the following techniques to further reduce vehicle emissions:

- Shuttle services between the resort, golf courses, and regional transit services shall be provided.

- Rideshare opportunities shall be encouraged.

- Walking trails and bike routes connections shall be provided to areas where regional transit services are located.

4.7.3 Tentative Map Area Impacts

Air quality impacts are generally considered regional in scope and effect (i.e. not specific to tentative maps within the SPA boundaries). Therefore, any air quality impacts at the tentative map level of detail would be the same as the Specific Plan Area level. Refer to Section 4.7.2 for a discussion of air quality impacts at the Specific Plan Area level of detail.

- Section 303, requiring states to establish and enforce water quality standards to protect and enhance beneficial uses of water for such purposes as recreation and fisheries.

- Section 304(a)(1), requiring the administrator of the Environmental Protection Agency (EPA) to publish criteria for water quality that reflect the latest scientific knowledge regarding the effects of pollutants in any body of water.

- Section 313(a), requiring that federal agencies observe state and local water quality regulations.

- Section 405 of the Water Quality Act (WQA) of 1987 added Section 402 (p) to the CWA. Pursuant to Section 402(p)(4) of the CWA, the EPA is required to promulgate regulations for National Pollutant Discharge Elimination System (NPDES) permit applications for stormwater discharges.

- Porter-Cologne Water Quality Control Act of 1969, mandates that the waters of the state shall be protected such that activities that may affect waters of the State shall be regulated to attain the highest quality.

- Resource Conservation and Recovery Act (RCRA) of 1976, is the primary law regulating the handling of hazardous waste, which includes wastes generated during environmental clean-up.

- Safe Drinking Water Act (40 U.S.C 100 et seq.), sets limits on concentrations of pollutants in drinking water sources.

- State Water Resources Control Board (SWRCB) regulations mandate a "non-degradation policy" for state waters, especially those of high quality.

- National Flood Insurance Act of 1968 and Flood Disaster Protection Act of 1973; the intent of these acts is to reduce the need for large flood control structures funded by the public and disaster relief by restricting development within the floodplain (DWR 1980).

4.8 HYDROLOGY/WATER QUALITY

4.8.1 Existing Conditions

Hydrology is a multidisciplinary subject that deals with the occurrence, circulation, and distribution of the Earth's waters. Hydrologic resources include the Earth's oceans, lakes, rivers, streams, and ground waters. These resources can have scientific, economic, and recreational value. Hydrologic resources within the study area include all surface water and ground water within the boundaries of the Santa Fe Valley SPA.

The following discussion addresses hydrologic issues associated with the proposed project, including surface water, ground water, drainage systems, and water quality. For the purposes of this section, the project study area is defined as the area encompassed by the SPA.

The following acts, executive orders and regulations apply to the occurrence of water and water quality within the SPA.

- Comprehensive Environmental Response Compensation Liability Act (CERCLA) of 1980 is the primary law that regulates remediation of environmental contamination.

- Executive Order 11988 (Floodplain Management) directs federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with occupancy and modification of floodplains.

- Executive Order 11190 (Protection of Wetlands; U.S.C 1221, 1226) directs federal agencies to avoid, to the extent possible, the long- and short-term adverse impacts associated with destruction or modification of wetlands.

- Federal Clean Water Act (CWA) of 1977 (33 U.S.C. 1251 et seq.), is the primary law regulating water pollution. Relevant sections include:

  - Section 208 requiring that states develop programs to identify and control non-point sources of pollution, including runoff.

- Section 303. requiring states to establish and enforce water quality standards to protect and enhance beneficial uses of water for such purposes as recreation and fisheries.

- Section 304(a)(1), requiring the administrator of the Environmental Protection Agency (EPA) to publish criteria for water quality that reflect the latest scientific knowledge regarding the effects of pollutants in any body of water.

- Section 313(a), requiring that federal agencies observe state and local water quality regulations.

- Section 405 of the Water Quality Act (WQA) of 1987 added Section 402 (p) to the CWA. Pursuant to Section 402(p)(4) of the CWA, the EPA is required to promulgate regulations for National Pollutant Discharge Elimination System (NPDES) permit applications for stormwater discharges.

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- Safe Drinking Water Act (40 U.S.C 100 et seq.), sets limits on concentrations of pollutants in drinking water sources.

- State Water Resources Control Board (SWRCB) regulations mandate a "non-degradation policy" for state waters, especially those of high quality.

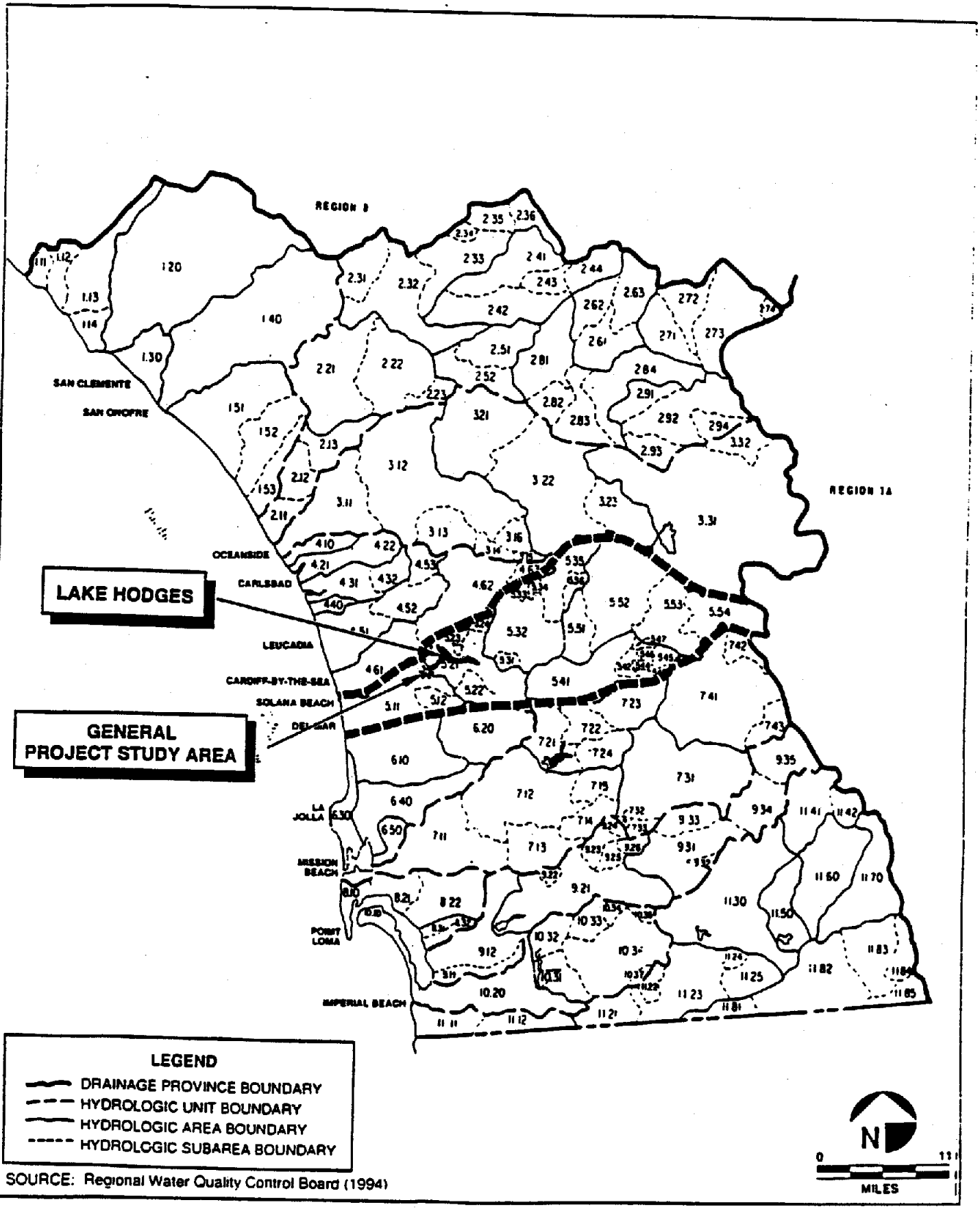
- National Flood Insurance Act of 1968 and Flood Disaster Protection Act of 1973: the intent of these acts is to reduce the need for large flood control structures funded by the public and disaster relief by restricting development within the floodplain (DWR 1980).

Regional Hydrologic Setting

The majority of the Santa Fe Valley SPA is located within the Rancho Santa Fe Subarea of the Solana Beach Hydrologic Area of the San Dieguito Hydrologic Unit (Figure 4.8-1), as defined by the RWQCB (RWQCB 1994); however, the northernmost portion of the SPA adjacent to the northwestern shore of Lake Hodges is located within the Del Dios Subarea of the Hodges Hydrologic Area of the San Dieguito Hydrologic Unit. The portion of the SPA within the Del Dios Subarea is comparatively small and is upstream of most of the proposed residential and commercial development. The following discussion focuses on the San Dieguito Hydrologic Unit.

The San Dieguito Hydrologic Unit covers a drainage area of approximately 350 square miles and contains the surface streams of the San Dieguito River, Santa Maria Creek, Lusardi Creek, and other tributary drainages to the San Dieguito River. Average annual precipitation within the SPA is approximately 13 inches (SCS 1973). Two major storage facilities, Sutherland Reservoir and Lake Hodges, and one smaller facility, San Dieguito Reservoir, are located within the San Dieguito Hydrologic Unit. This unit contains one coastal lagoon, the San Dieguito Lagoon, located at the mouth of the San Dieguito River, downstream of the SPA. During periods of low flow in the San Dieguito River, the lagoon is normally closed off from the ocean by a sand bar. A restoration project to restore the quality of sensitive wetland areas within San Dieguito Lagoon is currently in progress.

The San Dieguito River and its tributary creeks are intermittent streams, though they frequently flow for protracted periods. Summer algae blooms in Lake Hodges and San Dieguito Lagoon are among the most noticeable water quality impacts because of dry season landscape and nutrient-rich irrigation runoff, which are typically of much lower quality than storm runoff. Runoff from precipitation, ground-water discharge, and spillage from Lake Hodges account for almost all surface flows in the basin. Runoff from the majority of the SPA drains directly into the San Dieguito River; however, the southernmost portion of the project area drains into the lower reaches of Lusardi Creek before it joins the San Dieguito River.



SOURCE: Regional Water Quality Control Board (1994)

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Project Site Location Within San Diego Basin
Hydrographic Planning Unit

FIGURE
4.8-1

Regional Ground-Water Conditions

Water-yielding characteristics of the Rancho Santa Fe Subunit vary with local geologic conditions. Section 4.9, Geology/Seismicity/Soils contains a detailed discussion of existing geologic conditions within the project area. Metavolcanic rocks and granitic rocks within the Rancho Santa Fe Subunit typically yield only small quantities of water from fractures. The most significant source of ground water within the Subunit is alluvium within the San Dieguito River Valley. Beneficial uses of ground water in the Rancho Santa Fe and Del Dios Hydrologic Subareas include municipal, agricultural, and industrial uses as designated by the San Diego RWQCB (SDRWQCB 1994); however, ground water throughout most of the alluvial aquifer is largely unused because of water quality problems (Luke-Dudek 1988). Historically, ground water within the Rancho Santa Fe Subunit has been used mainly for irrigation purposes.

From available data, the thickness of the alluvial aquifer reaches over 180 feet near the coast and decreases inland. The major portion of the alluvial aquifer extends from the coastline up the Rancho Santa Fe Subunit approximately 7 miles to the Osuna Valley, which borders the southwestern corner of the project area. Therefore, the main portion of the alluvial aquifer within the Rancho Santa Fe Subunit lies southwest (i.e., downstream) of the project area; however, San Dieguito River alluvium within the project area is in hydrologic connection with the main portion of this alluvial aquifer.

Sources of recharge to the alluvial aquifer include subsurface inflows from surrounding rock units, precipitation, irrigation waters, and the San Dieguito River. Direct ground-water losses from the aquifer include subsurface outflows and water extracted by phreatophytes (i.e., plants with taproots extending to the water table). Lake Hodges Dam can be considered a sufficient seepage barrier that greatly restricts subsurface inflow from Lake Hodges (Luke-Dudek 1988); therefore, the majority of recharge only occurs downstream of the dam.

Site Ground-Water Conditions

According to a limited hydrogeologic evaluation for the proposed Bernardo Lakes development within the Santa Fe Valley SPA, ground water occurs within three distinct hydrogeologic environments, including (1) the deeper fracture system of the metavolcanic rocks, (2) the upper weathered zone of the metavolcanic rocks, and (3) the sandstones and

claystones of the Friars Formation and overlying alluvium (Geocon 1991). The ground-water table occurs above the metavolcanic rock interface with overlying rock units.

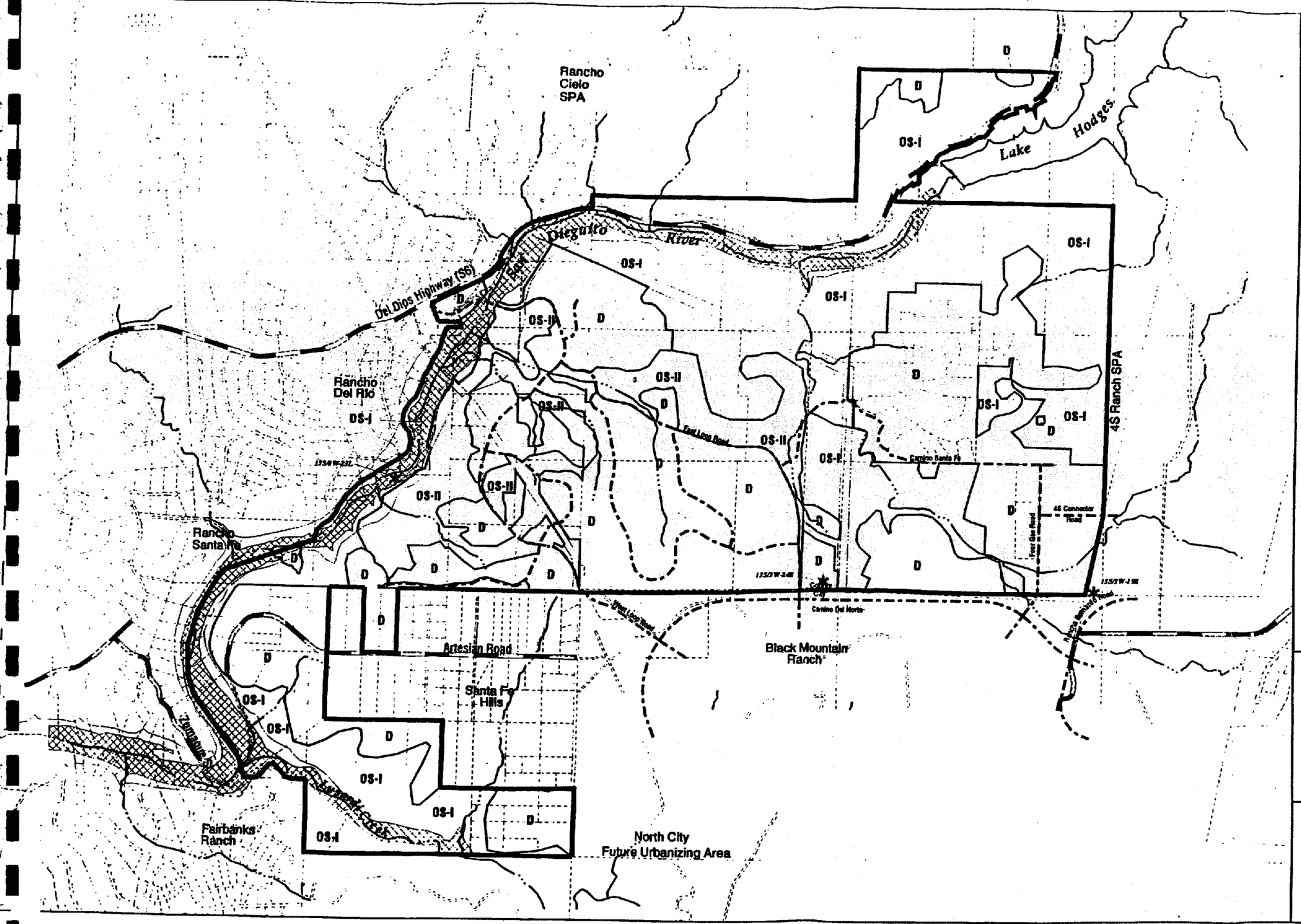
Ground-water Quality

Ground-water quality is determined principally by the chemical nature of the characteristic sediments and rocks in which the ground water is contained. Ground water is typically evaluated for its chemical constituents to assess current conditions and beneficial uses, or to identify possible contamination sources. Chemical constituent sources can be natural (e.g., contact with mineralized rock) or human-related (e.g., pesticide or fertilizer contamination).

Previous studies show a steady deterioration of ground-water quality in the alluvial aquifer of the Rancho Santa Fe Subunit (Luke-Dudek 1988). The deterioration has been attributed to the past overuse of ground water, resulting in sea water intrusion near the coast, the migration of highly mineralized waters from surrounding hillside rock units, and the general lack of a steady source of fresh water recharge. A 1983 study by the USGS reported that total dissolved solids (TDS) in ground water from the upper portion of the San Dieguito basin (southwest of the project area) ranged from 1,320 milligrams per liter (mg/l) to 1,810 mg/l, degrading downstream to over 20,000 mg/l near the coast. Throughout the main portion of the alluvial aquifer, chloride, sulfate, and iron have exceeded U.S. Environmental Protection Agency (EPA) Secondary Drinking Water Standards (Izbicki 1983).

Ground-water quality in the non-alluvial portions of the Rancho Santa Fe Subunit is less well documented because of the lack of wells in non-alluvial formations. A TDS concentration of 854 mg/l from a well is reportedly located immediately east of the SPA (Figure 4.8-2, Table 4.8-1) (Luke-Dudek 1988). The EPA Secondary Drinking Water Standard for TDS is 500 mg/l (DHS 1990). This well was reportedly completed in metavolcanic rock underlying the Friars Formation.

Available data indicate that ground-water quality within the SPA is relatively poor. Ground water from two wells located within the SPA contained 1,400 and 2,700 mg/l respectively (DWR 1967, Luke-Dudek 1988). The ground water from these wells was rated by DWR as marginal to inferior for domestic uses due to high sulfate content and high TDS and inferior for irrigation uses due to high boron content. Table 4.8-1 summarizes available



Hydrology

- 100-Year Floodplain (Source: County Floodplain Maps for San Dieguito River; FEMA Floodplain Map for Lusardi Creek)
- Dam Inundation Areas (Source: City of San Diego Utilities Engineering Department 1974)
- USGS Blue Line Streams
- Historic Well Location

Specific Plan Land Use

OS-I	Open Space I
OS-II	Open Space II
D	Developed

- Proposed Road

Base Map Legend

- Specific Plan Boundary
- Parcel Boundaries
- Easement
- Major Road
- USGS "Blue Line" Stream

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Floodplain and Dam Inundation Areas

FIGURE

4.8-2

Table 4.8-1

GROUND-WATER QUALITY DATA FROM HISTORIC ONSITE/ADJACENT WELLS*

	Well # 13S/3W-24R	Well # 13S/3W-23L	Well # 13S/2W-19R**
Ground-Water Type:	Sodium Chloride (NaCl)	Sodium Sulfate ($NaSO_4$)	
Rating for Irrigation Uses:	Inferior due to high boron content	Inferior due to high boron content and high electrical conductance	
Rating for Domestic Uses:	Margional due to high TDS	Inferior due to high sulfate content and high TDS	
Calcium (Ca)	83 mg/kg	364 mg/kg	
Sodium (Na)	334 mg/kg	456 mg/kg	
Sulfate (SO_4)	115 mg/kg	1,300 mg/kg	
Chloride (Cl)	575 mg/kg	460 mg/kg	393 mg/kg
Floride (F)	1.0 mg/kg	8.0 mg/kg	0.7 mg/kg
Boron (B)	0.18 mg/kg	0.42 mg/kg	0.2 mg/kg
Total Dissolved Solids (TDS)	1,400 mg/kg	2,700 mg/kg	854 mg/kg
Nitrate (NO_3)	0 mg/kg	0 mg/kg	
Electrical Conductance	2,395 micromhos	3,900 micromhos	
Date Sampled	3/12/57	3/27/57	7/9/84

Sources: DWR (1967), Luke-Dudek (1988)
* Refer to Figure 4.8-1 for well locations.
**Offsite well adjacent to southeastern corner of SPA.

ground-water quality data from wells located within the project area boundaries and directly adjacent to the SPA.

Surface Water Occurrence and Quality

The San Dieguito River and its tributaries are the main surface water bodies in the project area. Flow in the river is regulated immediately upstream of the project area by Lake Hodges Dam. Lake Hodges Dam was constructed in 1919 and defines the upper reach of the Rancho Santa Fe Subunit. Dam overflow has occurred 25 times from 1917 to 1982. More recently, Lake Hodges Dam has spilled in 1993, 1994, and 1995. During wet periods (e.g., 1935-46) the dam spilled on a regular basis; however, periods without spillage have been as long as 24 years (1954-77). In periods without spill, flow in the San Dieguito River is limited to dam leakage (less than 15 acre-feet/year) and surface runoff generated within the drainage basin below Lake Hodges (Luke-Dudek 1988). Surface water within the San Dieguito River watershed (including Lake Hodges) is designated by the San Diego RWQCB as having beneficial uses for municipal, agricultural, industrial, and recreational purposes, warm and cold freshwater habitat, wildlife habitat, and rare/threatened/ endangered species habitat (SDRWQCB 1994).

Spillage from Lake Hodges is an important source of ground-water recharge within the San Dieguito River basin. Water quality in Lake Hodges has been poor in recent years as a result of fluctuating water levels, evaporation, and increasing levels of TDS. Between 1970 and 1974, TDS concentrations in Lake Hodges in excess of 2,000 mg/l were measured by the City of San Diego (GEI 1994). Residential development and agricultural uses in the Lake Hodges watershed contribute to poor water quality (SDRWQCB 1994).

The Reservoir Management Team within the City of San Diego Drinking Water Quality Laboratory obtains water samples from Lake Hodges at least once a week. These samples are analyzed for various parameters. Table 4.8-2 presents 1993 and 1994 sampling results for samples collected just upstream of the dam.

Surface water within the San Dieguito River below Lake Hodges typically has TDS concentrations exceeding 1,000 mg/l. Two samples were collected in 1982 by the United States Geological Survey (USGS), one during the fall to reflect base flow and another following a late spring storm. The TDS concentration of the base flow sample was 1,200 mg/l, whereas the stormflow had a TDS of 620 mg/l (Luke-Dudek 1988).

Table 4.8-2

EXISTING WATER QUALITY IN LAKE HODGES

Constituent	Units	Water Quality Objective (Surface Water)	Water Quality Objective (Groundwater)	Sampling Event 2/8/93 to 4/22/93	Sampling Event 7/14/93 to 9/13/93	Sampling Event 2/8/94 to 3/11/94
pH	--	6.5 to 8.5	NA	7.44	8.38	7.98
TDS	mg/l	500	1000	362	571	674
Chlorides	mg/l	250	400	55.6	123	151
%Sodium	%	60	60			
Sulfates	mg/l	250	500	66.1	113	129
Total Phosphorus	mg/l	0.025	NA			
Iron	mg/l	0.3	0.3	0.074	ND	0.083
Manganese	mg/l	0.05	0.05	0.0009	0.041	0.0938
Turbidity	NTU	20	5	30	1.10	3.10
Color	color units	20	15	40	15	32
Fluoride	mg/l	1	1	0.134	0.263	0.268

Source: City of San Diego Drinking Water Quality Laboratory (1994).

Unit Key
-- = Unitless Quantity
mg/l = milligrams for liter
% = percent
NTU = nephelometric turbidity units
Color units = relative measure of color

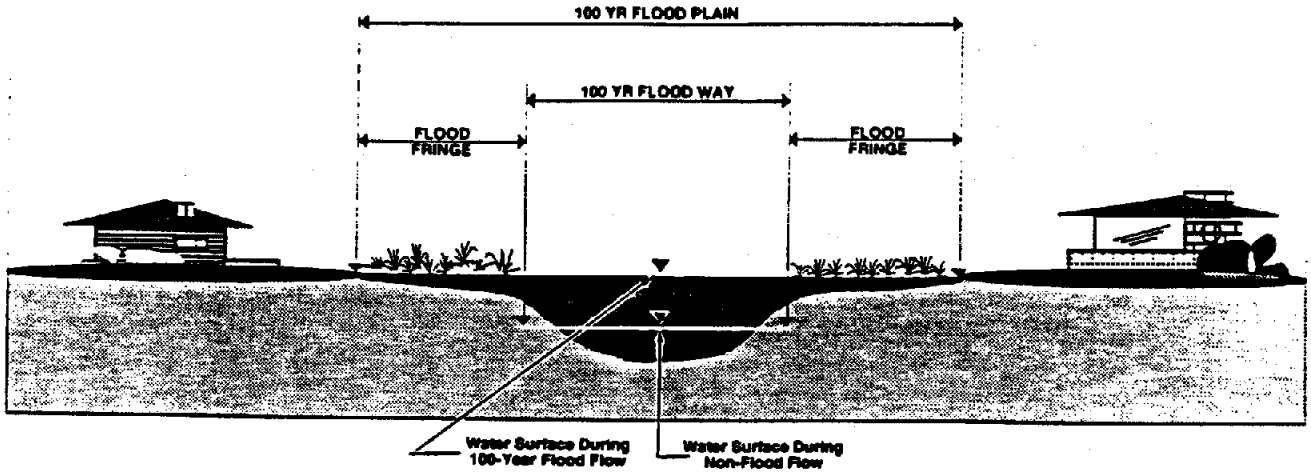
Flooding

The principal concern with flooding is the potential for injury and loss of life. and property damage caused by major floods (i.e., those having an average recurrence interval of 25 to 100 years (Merritt 1983). Floodplain management is a land use technique designed to avoid flood damage by restricting new development and construction in areas subject to flooding. This is accomplished through zoning restrictions on the area subject to flooding, typically defined as the 100-year floodplain. Land use activities in the floodprone area are restricted to those that would not suffer extensive damage from flooding.

As indicated on San Diego County parcel maps (e.g., Parcel Map 14704), a two-zone flood zoning approach is used by the County in the San Dieguito River Valley. The floodway is defined as that portion of the floodplain necessary to convey the majority of floodwater discharge (i.e., the main flood channel). No development is generally allowed within the floodway, since changes in the configuration of the floodway channel can result in a reduction of flow capacity and a corresponding rise of flood levels. Exceptions may be granted if hydraulic modeling (e.g., HEC-2, HEC-RAS computer modeling) demonstrates that construction in the floodway would not result in substantial changes in channel flow velocity or flood elevation. The remainder of the area encompassed by the 100-year floodplain is referred to as the flood fringe area. The flood fringe area is subject to flood inundation; however, this area does not contribute substantially to downstream flood discharge (County of San Diego 1995). Development within the flood fringe area is permitted with certain restrictions. Figure 4.8-2 shows the extent of the 100-year floodplain within the Santa Fe Valley SPA. Figure 4.8-3 illustrates the definitions of the floodway and flood fringe areas.

4.8.2 Specific Plan Area Impacts

Potential hydrology/water quality impacts to the SPA resulting from the proposed project include flooding, increased runoff, erosion and sedimentation. and degradation of surface and ground-water quality. Each of these impacts is discussed separately below.



FLOOD PLAIN

FLOOD PLAIN: The area adjoining a river, a stream, a watercourse, an ocean, a lake, or other body of standing water that may be covered by floodwater.

FLOODWAY: The channel of a river or stream and those parts of the flood plains adjoining the channel that are reasonably required to carry and discharge the floodwater or floodflow of any river or stream. Under provisions of the 1973 Flood Disaster Act, no future development may be permitted in this area.

FLOOD FRINGE: The flood fringe should normally be considered as the area between the designated floodway limit and the limit of the floodplain. Future development with flood proofing is allowed in the floodway fringe, provided the increase in flood stage above that of the natural conditions is minimal.

SOURCE: Modified from County of San Diego Department of Sanitation and Flood Control

OGDEN

Definition of Floodway and Flood Fringe Areas

FIGURE 4.8-3

Criteria for Significance Determination

- Flooding impacts to the proposed project would be significant if structures or facilities such as bridges, buildings, utilities, or paved surfaces are located within the floodway portion of a 100-year floodplain, or if structures were located within the flood fringe portion of the 100-year floodplain.

- Impacts as a result of increased runoff would be significant if development of the SPA resulted in increased discharge of surface water to the San Dieguito River or to any of its tributaries such that an increased risk of flooding in any of these drainages were to occur.

- Impacts as a result of erosion and sedimentation would be significant if development of the SPA resulted in increased runoff velocities in graded areas (e.g., cut/fill slopes, devegetated areas, etc.) or in surface water discharge areas (e.g., at culvert or stormdrain discharge locations), causing erosion and subsequent sedimentation in onsite or offsite areas.

- Water quality impacts would be significant if development of the proposed project resulted in the degradation of surface or ground-water quality.

Impact Analysis

Flooding

For the purpose of this analysis, flooding impacts are confined to those impacts related to a 100-year storm event and associated high flows in the San Dieguito River or its tributaries, as required by the San Diego County Hydrology Manual. Impacts caused by increased runoff are discussed separately below.

Two limited portions of the proposed golf course, along the western edge of the Santa Fe Valley SPA, encroach slightly upon the fringe area of the 100-year floodplain (Figure 4.8-2). Proposed land use in these areas of encroachment is Open Space II (passive and active recreational uses). As a result of the limited area of encroachment into the 100-year floodplain, and the lack of encroachment into the floodway, potential effects such as increased channel velocities or increased flood elevations are not anticipated.

Encroaching portions of the golf course would be subject to inundation during a 100-year storm: however. flow velocities within the flood fringe area are not anticipated to be high enough to cause erosional damage.

Small portions of proposed Open Space II within the Santa Fe Valley SPA also encroach upon the floodway and fringe areas of the 100-year floodplain. The only development planned in this area is a 20-foot wide strip of land proposed for a multi-use trail with paved and unpaved portions. Construction of the trail within the floodway may involve grading. which could alter floodway channel geometry, causing changes in channel velocities or increasing the elevation of the 100-year floodplain. In addition, portions of the paved trail within the floodway may be washed out during a 100-year storm.

Increased Runoff

The proposed development of the SPA would result in substantial grading activities and drainage alteration, compaction of surficial deposits, and construction of impervious (paved) surfaces. These activities would likely produce changes to the quantity of runoff both onsite and downstream of the site. Grading activities could affect the direction and velocity of runoff by changing drainage patterns (e.g., creating slopes, filling valleys). In addition, irrigation associated with the proposed golf courses and an increase in the area of impervious surfaces would likely introduce additional runoff to the San Dieguito River. Development of the proposed project would also cause increases in discharge volumes into natural swales and valleys of the site and increases in surface runoff velocity as a result of an increase in the area of impervious surfaces (e.g., rooftops, paved roadways, parking lots, etc.).

Erosion and Sedimentation

As discussed in Section 4.9, Geology/Seismicity/Soils, soils formed on various rock units throughout the SPA (e.g., dissected marine terrace deposits, sandstone, etc.) in areas proposed for residential development possess a severe erosion potential (SCS 1973; Geocon 1985, 1989). During construction, grading and other earthwork will render previously vegetated areas susceptible to intense erosion. Increased sediment production resulting from construction activities may have the potential to cause effects which include the following:

- Sheet and rill erosion and associated deposition may cause undesirable changes in graded areas such as building pads, cut/fill slopes, etc.

- Deposition of coarse-grained sediments may reduce flow capacity or completely plug natural or man-made channels, possibly resulting in downstream flooding.

- Deposition of sediment in adjacent onsite drainages may cause ecological changes, affecting species composition and population densities (see Section 4.2, Biological Resources). Sediment transported by runoff can gradually fill in adjacent drainages, causing flooding impacts.

After development of the SPA, increased surface water velocity of channelized and non-channelized flow exiting the roadway and other impermeable surfaces onto unpaved, natural surfaces has the potential to cause scour and erosion which could have similar, but less intense effects. In addition, localized erosion could occur where surface runoff is allowed to accumulate on graded (i.e., cut/fill) slopes.

Water Quality

Development of the SPA has the potential to decrease surface water quality both within the SPA and potentially downstream of the SPA. This would include short-term impacts related to construction activity (e.g., degradation of water quality as a result of construction-related sediment influx), long-term impacts as a result of residential development (e.g., an increase in urban pollutant runoff from impervious surfaces), and incremental increases in urban pollutant loading to downstream areas such as the San Dieguito Lagoon.

Additional potential impacts to surface water quality from the proposed project include the discharge of hazardous or toxic materials directly or indirectly into drainage systems. Specifically, contaminants such as oil, grease, and heavy metals from automotive sources would be expected to increase in post-development runoff. Some of these substances can be directly toxic to aquatic organisms at relatively low concentrations. In addition, the addition of hydrocarbons into aquatic systems can deplete dissolved oxygen by way of their bacterial degradation, which consumes oxygen. After long dry periods, as is typical in southern California, accumulation of these compounds on road surfaces can be considerably greater than during periods of more frequent rain. As a result, the influx of

these compounds to aquatic systems during the first rain can cause effects such as fish kills. The greatest concentration of these pollutants in surface runoff occur during the early stages or "first flush" (typically the first 1/2 inch) of a given rainfall or runoff event. These constituents have the potential to degrade water quality in the San Dieguito River and especially in downstream areas such as San Dieguito Lagoon.

Pesticides, herbicides, and fertilizers from residential and golf course areas would also be expected to occur in post-development runoff. Such substances may also be harmful to downstream aquatic organisms. In addition, increased nutrient levels in post-development runoff may incrementally increase the severity of summer algae blooms in the San Dieguito Lagoon. In view of the existing and proposed sensitive wetland areas located downstream of the SPA in San Dieguito Lagoon, adverse surface water quality impacts caused by increases in urban pollutants resulting from the proposed project are a major concern.

Reclaimed water to be supplied to the SPA for irrigation purposes must meet strict water quality standards as set forth in the California Administrative Code, Title 22. These standards are enforced by the Department of Health Services (DOHS) and the Regional Water Quality Control Board (RWQCB) and are based on public health concerns associated with the use of reclaimed water.

The RWQCB requires that the onsite use of reclaimed water shall not degrade local ground-water or surface water quality. A ground-water constituent of concern within the SPA is total dissolved solids (TDS). According to the San Diego RWQCB (1974), the TDS ground-water quality objective in this area is 1,500 mg/l for the majority of the SPA, and 1,000 mg/l for the northernmost portion of the SPA adjacent to Lake Hodges (i.e., the Hodges hydrologic area). The projected TDS of the Olivenhain Municipal Water District's reclaimed water is anticipated to be below the water quality objectives specified in the Basin Plan; however, the concentration (i.e., leaching) effects of spray irrigation and percolation into the ground-water regime. This may result in ground-water TDS values in excess of water quality objectives; therefore, potential adverse effects to ground-water quality may result.

Additional potential impacts to ground-water quality related to golf course operation may involve the onsite storage and application of hazardous materials including pesticides, herbicides, fertilizers, and petroleum products (e.g., fuels and oils for maintenance vehicles, etc.). This use could result in degradation of water quality through surface spills.

4.8.3 Level of Significance

The level of significance for each impact evaluated above for the proposed development of the SPA is described below.

- Flooding impacts associated with development of the SPA are significant due to potential changes in floodway channel geometry and associated floodway channel capacity resulting from construction of a paved trail within the floodway.

- Impacts due to increased runoff are significant.

- Impacts due to erosion and sedimentation are significant.

- Water quality impacts resulting from sedimentation and urban runoff associated with development of the SPA are significant.

With the implementation of mitigation measures in Section 4.8.4, all impacts to hydrology/ water quality will be mitigated.

4.8.4 Mitigation Measures

It is anticipated that all potentially significant impacts related to hydrology and water quality could be reduced through the implementation of the mitigation measures described below.

Mitigation Measures for Flooding Impacts

Portions of the paved trail within the floodway of the San Dieguito River shall be relocated outside of the floodway to the flooc fringe portion of the 100-year floodplain.

Mitigation Measures for Increased Runoff Impacts

The following mitigation measures shall be employed to reduce impacts due to increased runoff. The applicability of each of the following measures will vary from project to project:

- Drainage systems for each proposed development shall be designed in accordance with the recommendations of site-specific drainage studies by a qualified geotechnical or hydrological consultant. Proposed drainage system plans shall be submitted for review to the County of San Diego Department of Public Works (DPW), Flood Control Section. Final designs shall include all requirements and recommendations provided by these agencies.

- All project-related drainage facilities shall be designed to accommodate surface runoff associated with a 100-year storm event pursuant to requirements of the San Diego County DPW, Flood Control Section.

- Drainage channels shall be unlined wherever feasible to allow infiltration of site-related runoff. In addition, energy dissipaters shall be constructed wherever necessary to maintain non-erosive flow velocities. Energy dissipating structures such as rip rap strips and detention ponds shall be constructed to prevent erosion where runoff enters unpaved areas.

- Access roads, trails, and parking/storage areas shall be surfaced with permeable materials wherever practical to increase infiltration and minimize surface runoff.

- Removal and disposal of ground water encountered during construction activities (i.e., dewatering) shall be coordinated with the local RWQCB to ensure proper disposal methods and locations.

- Irrigation requirements on graded slopes and golf course areas shall be reduced through the use of native and drought-tolerant plant species as ground cover wherever feasible.

- Irrigation requirements on graded slopes and golf course areas shall be reduced through means such as the use of low-pressure sprinkling systems wherever feasible and conducting irrigation operations to minimize runoff and evaporation losses.

- Final design specifications shall include a schedule for regular maintenance of all drainage facilities to insure proper working condition.

Mitigation Measures for Erosion and Sedimentation Impacts

To reduce impacts due to soil erosion a number of construction techniques and permanent mitigation measures are recommended. Construction techniques to reduce erosion shall be employed as soon as is feasible during construction of the proposed project. Permanent measures shall be employed following construction of the proposed project.

Construction-level Erosion and Sedimentation Mitigation

To reduce impacts due to construction-related soil erosion, a number of temporary measures are recommended including the following:

- Soil stockpiles and exposed (graded) slopes shall be covered with plastic sheeting where feasible during inclement weather conditions.

- Drainage control devices shall be constructed to direct surface water runoff away from slopes and other graded areas: temporary berms or hay bale barriers or sandbags shall be placed along the toes of graded slopes or along the edges of floodplains to help control and reduce sedimentation during grading operations.

- Disturbed slopes shall be immediately seeded with groundcover vegetation.

- Disturbance to existing vegetation and slopes shall be minimized; the angle of constructed slopes shall also be minimized where feasible.

- Silt curtains shall be placed around construction areas to protect natural drainage channels from sedimentation.

- Construction and grading shall be avoided during periods of inclement weather.

- Graded areas and temporary (haul) roads shall be sprayed with water during construction to control fugitive dust.

- Temporary sedimentation/desilting basins shall be constructed where needed during grading activities to minimize the amount of sediment entering existing drainages onsite and offsite.

Permanent Erosion and Sedimentation Mitigation

To reduce impacts due to post-development soil erosion. a number of permanent measures are also recommended:

- Irrigation requirements on graded slopes and golf course areas shall be reduced through means such as the use of low-pressure sprinkling systems and conducting irrigation operations to minimize runoff and evaporation losses.

- Prior to approval of final grading and project plans, a drainage control plan shall be prepared by a qualified geotechnical or hydrological consultant. Recommendations on the type, design, and location of temporary and permanent drainage facilities shall be incorporated into the final project design.

- Drainage channels shall be unlined wherever feasible to allow infiltration of site-related runoff.

- Energy dissipating structures such as rip rap strips and detention ponds shall be constructed downstream of all culverts, storm drain outlets, and subdrain outlets, where surface water runoff from drainage facilities enters natural drainages.

- Runoff diversion structures such as inlet pipes and brow ditches shall be constructed where appropriate to minimize runoff flow down graded slopes.

Mitigation Measures for Water Quality Impacts

The following mitigation measures shall be employed to reduce surface water and ground-water quality impacts resulting from the proposed project:

- Source control practices shall be implemented that would reduce the amount and likelihood of contaminants coming into contact with surface runoff. Examples

of source control practices include covering outdoor facilities that contain potential contaminants; encouraging proper use and disposal of pesticides, herbicides, and fertilizers; controlled methods, application rates, and application frequency of these chemicals; encouraging alternative methods for controlling insects and weeds using, physical, biological, and lower-toxicity methods; and handling, recycling and disposing of chemicals in a safe, proper manner.

- Prior to approval of the final project plans, a spill prevention and control plan shall be developed for activities that require the use of hazardous materials such as fuels, fertilizers, pesticides, herbicides, cleaners, etc.

- The following ongoing measure would be required to reduce potential TDS impacts related to the use of reclaimed water for irrigation if the reclaimed water exceeds TDS objectives or does not employ nutrient removal:

  - Monitoring for TDS and nutrient levels shall be performed on a regular basis and the results submitted to the San Diego RWQCB. If the levels exceed wastewater discharge requirements for the use of reclaimed water, the discharge must cease until proper treatment has been accomplished or the reclaimed water has been diluted to lower TDS concentrations to meet the requirements.

- Mitigation measures employed during grading, and on a permanent basis, to minimize runoff and associated erosion and sedimentation shall be incorporated into the final grading plans, pending approval by the County.

- Impacts to surface water quality from contaminated runoff shall be mitigated through the use of best management practices. These measures provide for percolation of storm water runoff through soil or vegetation prior to discharge into natural channels. Possible measures include the following: unlined drainage channels, grassed swales along streets, and the sides of storm drain channels. Final stormwater design plans shall include measures to prevent the "first flush" (i.e., the first 1/2 inch) of rainfall from flowing directly into natural onsite or offsite drainages. Such measures include infiltration trenches or basins, and riparian strips.

4.8.5 Tentative Map Area Impacts

Balcor Subdivision Tentative Map Impacts

Criteria for Significance Determination

Flooding, increased runoff, erosion and sedimentation, and water quality impacts associated with the proposed Balcor subdivision are evaluated according to the same significance criteria listed for the SPA (see Section 4.8.2). In addition, flood impacts caused by failure of the existing/proposed earth dams on the adjacent McCrink property or the Balcor property would be significant if structures or facilities such as buildings, utilities, golf course areas, or paved surfaces are located within the flood inundation area resulting from dam failure.

Impacts Analysis

Flooding

Flooding impacts associated with the proposed Balcor subdivision are generally discussed under impacts to the SPA described above. Additional flooding impacts related to specific features of the proposed Balcor subdivision are discussed below.

A proposed bridge would span the San Dieguito River in the western portion of the Balcor development. According to discussions with the civil engineer for the Balcor property, three bridge piers associated with the bridge foundation would be located within the river floodway. Potential impacts associated with the location of bridge piers within the floodway include increased flood elevations or increased channel velocity, and associated erosion in the vicinity of the bridge caused by construction of the floodway channel. Increased flood elevations could result in inundation of the western portion of the SPA or areas downstream of the SPA by flood waters during a 100-year storm event. Changes in channel velocity could result in erosion impacts adjacent to or downstream of the bridge.

The eastern portion of the proposed clubhouse site west of the San Dieguito River, and the western portion of the nearby proposed resort area east of the river, lie within the inundation area likely to result from a catastrophic failure of Lake Hodges Dam (Figure 4.8-2). The clubhouse structure is located just above the inundation area and

therefore would not be subject to damage during such a failure: however, buildings associated with the resort lie within the inundation area and would be subject to damage during such a failure.

Two roadway segments and portions of the golf course proposed in the area southeast of the clubhouse site also lie within a dam breech inundation area, as shown in Figure 4.8-4. The inundation area shown is based on the results of hydraulic modeling by Chang (1995b) and corresponds to the extent of flooding resulting from the failure of a series of three earth dams located upstream within the adjacent McCrink subdivision, or the failure of a proposed lake dam located in the eastern portion of the Balcor subdivision. The locations of the earth dams are shown on Figure 4.9-3.

A fourth earth dam is also present on the McCrink property upstream (southeast) of the other three dams (Figure 4.9-3); however, anticipated runoff into the reservoir behind this dam is considered minimal, even during a major rainy episode, because the reservoir's drainage basin is limited to the immediate surroundings (Geocon 1989). Failure of this fourth dam was therefore not considered in the dam breech analysis of Chang (1995a). Based on field observations, Geocon (1989) concluded that the earth dams could be retained but may require modification or other remedial measures in order to be rendered safe and effective.

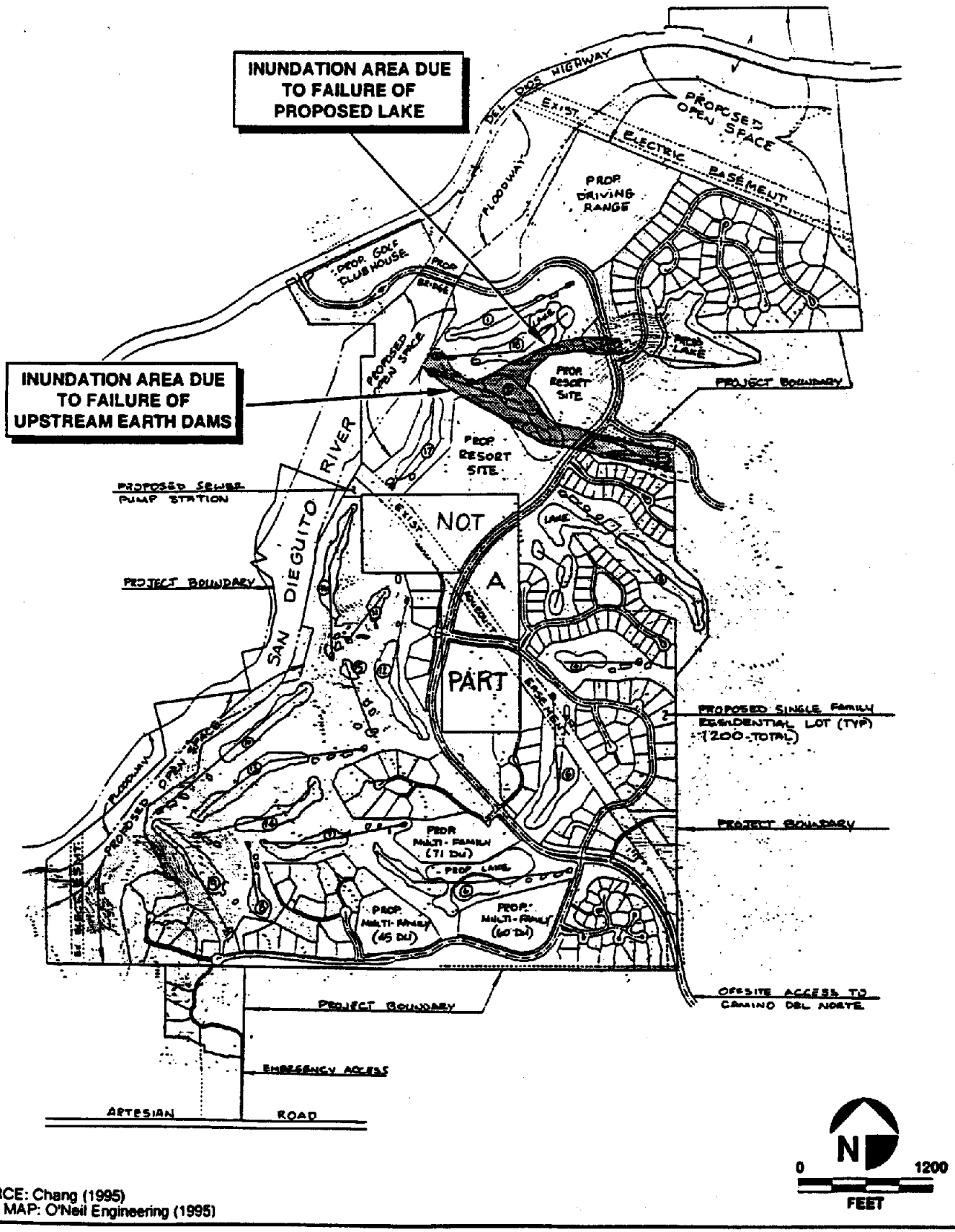
No residential or commercial structures are proposed within the inundation area shown in Figure 4.8-4. Impacts associated with failure of the earth dams or the lake dam include localized erosional damage to portions of the golf course and damage to paved roadway segments and underground utilities (e.g., sewer systems, power lines, telephone cables) located within the inundation area.

Increased Runoff

Increased runoff impacts associated with the Balcor subdivision are generally discussed under impacts to the SPA previously described.

Erosion and Sedimentation

Impacts to the Balcor subdivision are generally discussed under impacts to the SPA previously described: however, due to the proximity of the proposed golf course to the



SOURCE: Chang (1995)
BASE MAP: O'Neil Engineering (1995)

OGDEN

Post - Development Inundation Area for Balcor Tentative Map Resulting from Failure of Upstream Earth Dams and Proposed Lake

FIGURE **4.8-4**

San Dieguito River and the lack of an extensive buffer zone between the golf course and the river. sediment-laden runoff associated with grading of golf course areas is a particular concern for the proposed Balcor subdivision.

Water Quality

Water quality impacts associated with the Balcor subdivision are generally discussed under impacts to the SPA previously described: however, such impacts are of particular concern due to potential water quality degradation associated with the construction and operation of a golf course directly adjacent to the San Dieguito River. In addition, increased nutrient levels in golf course runoff have the potential to degrade surface water quality downstream of the Balcor subdivision.

Balcor Subdivision Level of Significance

- Impacts associated with flooding would be significant for the proposed Balcor subdivision due to the planned construction of bridge piers within the floodway of the San Dieguito River.

- Additional flood impacts to the proposed Balcor subdivision associated with failure of the earth dams located on the adjacent McCrink property, or failure of the proposed lake dam located on the Balcor property, would be significant due to expected damage to roadway segments, underground utilities, and golf course areas located within the resulting flood inundation area.

- Given the unliklihood of a catastrophic failure of Lake Hodges Dam, flood damage to the proposed resort area resulting from such a failure is not considered a significant impact.

- Impacts associated with increased runoff would be significant for the proposed Balcor subdivision due to expected increases in the quantity of runoff both onsite and downstream of the site.

- Impacts associated with erosion and sedimentation would be significant for the proposed Balcor subdivision.

- Impacts to water quality would be significant for the proposed Balcor subdivision.

With the implementation of mitigation measures in Section 4.8.4 and specific mitigation measures for Balcor tentative map impacts, all impacts to hydrology/water quality will be mitigated.

Balcor Subdivision Mitigation

Flooding Impacts

The following mitigation measures are required to reduce significant flooding impacts associated with the proposed Balcor development:

- Prior to approval of the Final map and prior to final bridge design, and prior to approval of grading plans or improvement plans in lieu of grading plans, hydraulic modeling shall be conducted to evaluate potential changes in flood elevations and channel discharge velocities associated with location of bridge piers within the floodway. Examples of such models include the HEC-2 and HEC-RAS computer models. If modeling results indicate that flood elevation changes are in excess of the allowable range specified by the County, bridge design shall be modified such that these changes are within the established limit. Similarly, if modeling results indicate that channel discharge velocity changes would result in increased erosion, the bridge design shall be modified such that significant erosional impacts are reduced. In the event that hydraulic modeling results indicate that the bridge as designed cannot be constructed without causing such impacts, then an alternative design should be developed.

- To minimize the potential for flood damage to the proposed Balcor subdivision due to failure of the McCrink earth dams, remedial grading or other measures recommended as a result of additional dam stability studies shall be incorporated into the final grading and construction plans for the McCrink subdivision (refer to Section 4.8.5.3).

Increased Runoff Impacts

Mitigation measures for increased runoff impacts associated with the proposed Balcor subdivision are the same as those listed for the SPA (see Section 4.8.2). In addition, all drainage control systems and facilities shall be designed to accommodate the 100-year storm discharges computed for the proposed development by a qualified hydrological consultant. Implementation of these mitigation measures would reduce significant impacts associated with the proposed Balcor subdivision.

Erosion and Sedimentation Impacts

Mitigation measures for erosion and sedimentation impacts associated with the proposed Balcor subdivision are the same as those listed for the SPA (see Section 4.8.2). Implementation of applicable mitigation measures listed in Section 4.9.2 would reduce significant erosion and sedimentation impacts associated with the proposed Balcor subdivision.

Water Quality Impacts

In addition to the mitigation measures for water quality impacts listed in Section 4.8.2, the following mitigation measures are recommended to reduce water quality impacts associated with the proposed Balcor subdivision:

- Prior to approval of the final project plans, a golf course maintenance plan shall be submitted to the County of San Diego and the San Diego RWQCB as part of the final project design for the proposed Balcor development. The golf course maintenance plan shall include but not be limited to the following measures:

  - Irrigation and chemical application requirements shall be reduced through the retention of existing vegetation and use of native and drought-tolerant species wherever feasible.

  - Irrigation requirements shall be reduced through the use of low-pressure sprinkler systems where feasible and conducting irrigation operations to minimize runoff and evaporation losses.

- Requirements for chemical pesticides, herbicides, and fertilizers shall be minimized through site-specific rather than areawide application.

- Proper storage and handling of hazardous materials stored onsite shall be provided in association with golf course operation. This may involve techniques such as using approved storage containers, providing training in proper handling and application methods, and utilizing spill containment measures and source control plans in storage areas (e.g., concrete or other impermeable pads equipped with containment berms or ditches). All proposed containment and safety measures will be subject to review and approval by the County of San Diego, Department of Environmental Health (SDCDEH).

- Golf course storage ponds shall be designed to include the use of impermeable liners to prevent collected runoff from percolating into the ground-water regime.

- Subsurface drains shall be installed below greens, bunkers, and tees to collect runoff and channel it into a series of strategically located retention ponds. No golf course runoff shall be allowed to enter open water courses without first being biologically treated by the retention pond system.

- Biologically treated water from retention ponds shall be recycled as golf course irrigation water to minimize irrigation water requirements and post-development runoff volumes.

- Vegetated berms or riparian filter strips shall be provided where the limits of grading or clearing make it difficult to divert surface runoff from the golf course areas to retention ponds. Berms and/or filter strips shall be constructed prior to golf course grading activities to minimize the volume of sediment-laden runoff entering the San Dieguito River during construction activities.

- Monitoring of water quality shall be conducted if deemed appropriate by the County of San Diego or the San Diego RWQCB.

4.8.5.2 Seaton Subdivision Tentative Map Impacts

Criteria for Significance Determination

Flooding, increased runoff, erosion and sedimentation, and water quality impacts associated with the proposed Seaton subdivision are evaluated according to the same significance criteria listed for the SPA (see Section 4.8.2).

Impacts Analysis

Flooding

The Seaton subdivision is located outside of any known 100-year floodplains; therefore, flooding impacts associated with the Seaton subdivision are not anticipated.

Increased Runoff

Increased runoff impacts associated with the Seaton subdivision are generally discussed under impacts to the SPA previously described.

Erosion and Sedimentation

Erosion and sedimentation impacts to the Seaton subdivision are generally discussed under impacts to the SPA previously described. Erosion and sedimentation impacts specific to the proposed Seaton development include those associated with alteration of the existing drainage tributary located in the northeastern portion of the site. Construction of a proposed road in this area would require grading within the tributary. Sediment-laden runoff associated with road grading activities could clog the existing channel, producing localized flood impacts during a subsequent rainfall event. Alternatively, increased surface water runoff velocities resulting from an increase in impervious road-surface area within the channel could erode the channel locally, resulting in gullying or other erosional impacts; however, increased erosion and sedimentation impacts could still be effectively mitigated by employing the mitigation measures discussed in Section 4.8.2.

Water Quality

Water quality impacts associated with the Seaton subdivision are generally discussed under impacts to the SPA previously described.

Seaton Subdivision Level of Significance

Flooding impacts associated with the proposed Seaton subdivision are not significant. Increased runoff, erosion and sedimentation, and water quality impacts associated with the Seaton subdivision are significant and mitigable.

With the implementation of mitigation measures in Section 4.8.4 and specific mitigation measures for Seaton tentative map impacts, all impacts to hydrology/water quality will be mitigated.

Seaton Subdivision Mitigation

Flooding Impacts

No mitigation measures are required.

Increased Runoff Impacts

Mitigation measures for increased runoff impacts associated with the proposed Seaton subdivision are the same as those listed for the SPA (see Section 4.8.2). In addition, all drainage control systems and facilities shall be designed to accommodate the 100-year storm discharges computed for the proposed development by a qualified hydrological consultant. Implementation of applicable mitigation measures listed in Section 4.9.2 would reduce significant increased runoff impacts associated with the proposed Seaton subdivision.

Erosion and Sedimentation Impacts

Mitigation measures for erosion and sedimentation impacts associated with the proposed Seaton subdivision are the same as those listed for the SPA (see Section 4.8.2). Implementation of applicable mitigation measures listed in Section 4.9.2 would reduce

significant erosion and sedimentation impacts associated with the proposed Seaton subdivision.

Water Quality Impacts

Mitigation measures for water quality impacts associated with the proposed Seaton subdivision are the same as the mitigation measures listed for the SPA (see Section 4.8.2). Implementation of the applicable mitigation measures listed in Section 4.8.2 would reduce significant water quality impacts associated with the proposed Seaton subdivision.

McCrink Ranch Subdivision Tentative Map Impacts

Criteria for Significance Determination

Flooding, increased runoff, erosion and sedimentation, and water quality impacts associated with the proposed McCrink subdivision are evaluated according to the same significance criteria listed for the SPA (see Section 4.8.2). Additional flood impacts would be significant where failure of the existing earth dams on the McCrink property damaged buildings, roadway segments, underground utilities, or golf course areas on the Balcor property located downstream of the McCrink earth dams.

Impacts Analysis

Flooding

No utilities, structures, or facilities associated with the proposed subdivision would be located within any existing 100-year floodways or floodplains; therefore, flooding impacts are not anticipated for the proposed project. As discussed in Section 4.8.5.1, flooding impacts to the adjacent proposed Balcor subdivision would result from failure of the earth dams located on the McCrink property.

Increased Runoff

Impacts to the McCrink subdivision are generally discussed under impacts to the SPA previously described. Post-development discharges for onsite drainage tributaries to the San Dieguito River were calculated for a 100-year storm event of 6-hour duration, as

required by the County of San Diego Hydrology Manual (Chang 1994). Computed discharges at proposed roadway crossings across the site ranged from 9 cubic feet per second (cfs) to 342 cfs. A detailed, site-specific stormwater drainage design for the McCrink subdivision has not been developed; however, drainage structures and facilities will be designed to accommodate the 100-year storm discharges calculated by Chang (1994).

Erosion and Sedimentation

Impacts to the McCrink subdivision are generally discussed under impacts to the SPA previously described. Erosion and sedimentation impacts specific to the proposed McCrink development include those associated with alteration of the existing drainage channel located in the southern and western portions of the site. Due to the proximity of proposed residential areas to the drainage channel and the lack of an extensive buffer zone between the channel and the residential development, sediment-laden runoff associated with residential grading activities could clog the existing channel, producing localized flood impacts during a subsequent rainfall event. Alternatively, increased surface water runoff velocities resulting from an increase in impervious surface area adjacent to the drainage channel could erode the channel locally, resulting in gullying or other erosional impacts; however, increased erosion and sedimentation impacts could still be effectively mitigated by employing the mitigation measures discussed in Section 4.8.2.

Water Quality

Impacts to the McCrink subdivision are generally discussed under impacts to the SPA previously described; however, an additional water quality problem of concern is related to the proposed equestrian facility. Animal wastes generated at the equestrian facility could result in water quality degradation in the form of bacterial contamination in the adjacent drainage located just east of the facility. This is considered a significant impact.

Additional water quality degradation could result from construction and operation of a golf course near the drainage tributary located in the southern and western portions of the site. This is considered a significant impact.

McCrink Ranch Subdivision Level of Significance

Flooding impacts to the proposed McCrink subdivision are not significant. Additional flood impacts to the adjacent Balcor property resulting from the failure of the existing earth dams on the McCrink property are significant. Increased runoff, erosion and sedimentation, and water quality impacts associated with the proposed McCrink subdivision are significant.

McCrink Ranch Subdivision Mitigation

With the implementation of mitigation measures in Section 4.8.4 and specific mitigation measures for McCrink Ranch tentative map impacts, all impacts to hydrology/water quality will be mitigated.

Flooding Impacts

Prior to approval of final maps, prior to issuance of grading permits or improvement plans in lieu of grading permits, additional studies shall be conducted to evaluate the stability and water retention capabilities of the existing earth dams located on the McCrink property. Remedial grading or other measures recommended as a result of these studies shall be incorporated into the final grading and construction plans for the McCrink subdivision. Processing and approval by the Division of Safety of Dams (DSOD) shall be required prior to any modification, repair, or removal operations for those dams falling under DSOD jurisdiction (Geocon 1989). A qualified geotechnical consultant shall be retained during grading operations to ensure that the recommendations developed during the dam stability studies are properly implemented.

Increased Runoff Impacts

Mitigation measures for increased runoff impacts associated with the proposed McCrink subdivision are the same as the mitigation measures listed for the SPA (see Section 4.8.2). In addition, all drainage control systems and facilities shall be designed to accommodate the 100-year storm discharges computed for the proposed development by Chang (1994). Implementation of this mitigation measure along with the applicable mitigation measures listed in Section 4.8.2 would reduce significant increased runoff impacts associated with the proposed McCrink subdivision.

Erosion and Sedimentation Impacts

Mitigation measures for erosion and sedimentation impacts associated with the proposed McCrink subdivision are the same as the mitigation measures listed for the SPA (see Section 4.8.2). In addition, the following mitigation measure shall be employed:

- All drainage control systems and facilities shall be designed to accommodate the 100-year storm discharges computed for the proposed development by Chang (1994). Implementation of this mitigation measure along with the applicable mitigation measures listed in Section 4.8.2 would reduce significant erosion and sedimentation impacts associated with the proposed McCrink subdivision.

Water Quality

Mitigation measures for significant water quality impacts associated with the proposed McCrink subdivision are the same as those listed for the SPA (see Section 4.8.2). In addition, the following mitigation measures shall be employed:

- A maintenance plan shall be prepared for the equestrian center to preclude potential water quality impacts associated with animal wastes. This plan shall include consultation with the RWQCB and the SDCDEH as necessary in the measures described below.

  - Horses shall be restricted from streambed access except at designated crossing points.

  - All stables shall be cleaned at least once daily.

  - Animal wastes shall be disposed of in an approved location, pursuant to recommendations by the RWQCB. Specifically, no animal wastes shall be disposed of within or near enough to any water course such as to constitute a potential water quality concern.

  - The maintenance plan shall be submitted to the RWQCB and the SDCDEH for approval prior to implementation.

- A golf course maintenance plan shall be submitted to the San Diego RWQCB and the SDCDEH as part of the final project design for the proposed McCrink development. The golf course maintenance plan shall include the same measures listed under the golf course maintenance plan for the proposed Balcor subdivision.

Bernardo Lakes Tentative Map Impacts

Criteria for Significance Determination

Flooding, increased runoff, erosion and sedimentation, and water quality impacts associated with the proposed Bernardo Lakes subdivision are evaluated according to the same significance criteria listed for the SPA (see Section 4.8.2).

Impacts Analysis

Flooding

The proposed Bernardo Lakes subdivision is located outside of the 100-year floodplain of the San Dieguito River; however, the site contains a 100-year floodway associated with a tributary drainage to the San Dieguito River, as shown by a flowage easement granted per County Parcel Map 14704 (RBF/Sholders & Sanford 1995). This flowage easement transects the central portion site from northwest to southeast. No residential or commercial development is planned within this easement; therefore, flooding impacts are not anticipated for developed areas. Portions of a 12-foot wide equestrian/hiking trail are located within the flood easement; however, this trail would be unpaved. Provided that the configuration of the floodway is not changed in establishing the trail, potential impacts such as increased channel velocities or increased flood elevations resulting from the location of the trail within the floodway channel are not anticipated.

Two earth dam embankments were observed within the central drainage of the Bernardo Lakes property. Both dams have experienced erosion damage (Geocon 1995); however, the stability of these dam embankments for water retention purposes has not been evaluated. The locations of these two dams are shown in Figure 4.9-3. Flood impacts resulting from the failure of these existing earth dams may include damage to downstream

structures or facilities such as buildings, utilities, golf course areas, or paved surfaces located within the flood inundation area resulting from dam failure.

Increased Runoff

Impacts to the Bernardo Lakes subdivision are generally discussed under impacts to the SPA previously described. Post-development discharges for the existing onsite drainage were calculated for a 100-year storm event of 6-hour duration, as required by the County of San Diego Hydrology Manual (RBF/Sholders & Sanford 1995). Computed discharges across the site ranged from 1150 cfs to 1725 cfs. A detailed, site-specific stormwater drainage design for the Bernardo Lakes subdivision has not been developed; however, drainage structures and facilities will be designed to accommodate the 100-year storm discharges calculated by RBF/Sholders & Sanford (1995). Development of the project would include onsite storm drain systems that will facilitate drainage into the above floodplain (RBF/Sholders & Sanford 1995).

Erosion and Sedimentation

Impacts to the Bernardo Lakes subdivision are generally discussed under impacts to the SPA previously described. Erosion and sedimentation impacts specific to the proposed Bernardo Lakes development include those associated with potential alteration of the existing drainage channel in the central portion of the site. Due to the proximity of proposed residential areas to the drainage channel and the lack of an extensive buffer zone between the channel and the residential development, sediment-laden runoff associated with residential grading activities could clog the existing channel, producing localized flood impacts during a subsequent rainfall event. Alternatively, increased surface water runoff velocities resulting from an increase in impervious surface area adjacent to the drainage channel could erode the channel locally, resulting in gullying or other erosional impacts; however, increased erosion and sedimentation impacts could still be effectively mitigated by employing the mitigation measures discussed below and in Section 4.8.2.

Water Quality

Impacts to the proposed Bernardo Lakes subdivision would generally be the same as impacts to the SPA previously discussed; however, an additional water quality impact specific to the Bernardo Lakes subdivision would result from the accumulation of urban

pollutants in the proposed storage pond in the western portion of the site. Contaminants such as oil, grease, and heavy metals, from automotive sources could migrate into the storage pond if surface water runoff from the adjacent residential area were allowed to flow into the pond. The addition of hydrocarbons to aquatic systems can deplete dissolved oxygen by way of the bacterial degradation of the hydrocarbons, which consumes oxygen. Such oxygen depletion may adversely affect aquatic organisms associated with the storage pond.

Bernardo Lakes Subdivision Level of Significance

Flooding impacts associated with the failure of the existing earth dams are significant. Other flood-related impacts, such as those resulting from a 100-year flood, are not significant. Increased runoff, erosion and sedimentation, and water quality impacts associated with the proposed Bernardo Lakes subdivision are significant.

With the implementation of mitigation measures in Section 4.8.4 and specific mitigation measures for Bernardo Lakes tentative map impacts, all impacts to hydrology/water quality will be mitigated.

Bernardo Lakes Subdivision Mitigation

Flooding Impacts

- If the existing earth dams are to remain in use, additional studies shall be conducted prior to approval of final maps, issuance of grading permits, or improvement plans in lieu of grading permits, to evaluate the stability and water retention capabilities of the dams. Remedial grading or other measures recommended as a result of these studies shall be incorporated into the final grading and construction plans. Alternatively, recommendations regarding removal of the dams shall be incorporated into the final grading and construction plans if the dams are not to remain in use. Processing and approval by the Division of Safety of Dams (DSOD) shall be required prior to any modification, repair, or removal operations if studies indicate that the dams fall under DSOD jurisdiction. A qualified geotechnical consultant shall be retained during grading operations to ensure that the recommendations developed during the dam stability/removal studies are properly implemented.

- Additional studies shall also be conducted to determine the downstream inundation area resulting from failure of the dams if they are to remain in use. If such studies indicate that commercial or residential buildings would be subject to damage in the event of dam failure and subsequent flooding, such buildings shall be relocated outside the flood inundation area.

Increased Runoff Impacts

Mitigation measures for increased runoff impacts associated with the proposed Bernardo Lakes subdivision are generally the same as those listed for the SPA (see Section 4.8.2). In addition, the following mitigation measures are also required to minimize potential increased runoff impacts:

- As recommended in the preliminary hydrology study for the development (RBF/Sholders & Sanford 1995), the proposed storm drain systems shall be designed to maintain flow directions on the site, and diversion of flow shall be avoided.

- All drainage control systems and facilities shall be designed to accommodate the 100-year storm discharges computed for the proposed development by RBF/Sholders & Sanford (1995).

Implementation of the above mitigation measures in addition to the applicable mitigation measures listed in Section 4.8.2 would reduce significant increased runoff impacts associated with the proposed Bernardo Lakes subdivision.

Erosion and Sedimentation Impacts

Mitigation measures for erosion and sedimentation impacts associated with the proposed Bernardo Lakes subdivision are generally the same as those listed for the SPA (see Section 4.8.2). Implementation of the mitigation measures listed in Section 4.8.2 would reduce significant erosion and sedimentation impacts associated with the proposed Bernardo Lakes subdivision.

Water Quality Impacts

Mitigation measures for water quality impacts associated with the proposed Bernardo Lakes subdivision are generally the same as those listed for these same impacts in the impact analysis for the SPA (see Section 4.8.2). In addition. the following mitigation measure is also required to minimize water quality impacts.

- Surface water from the proposed development in the central portion of the site shall be diverted away from the adjacent water storage pond to prevent urban pollutants from accumulating in the pond.

Implementation of the above mitigation measures in addition to the applicable mitigation measures listed in Section 4.8.2 would reduce significant water quality impacts associated with the proposed Bernardo Lakes subdivision.

4.9 GEOLOGY/SEISMICITY/SOILS

4.9.1 Existing Conditions

The geologic resources of an area consist of all soil and bedrock materials. For the purpose of this section, the terms soil and rock will refer to unconsolidated and consolidated earth materials, respectively, regardless of depth. Geologic resources include mineral deposits, significant landforms, and tectonic features. These resources can have scientific, economic, and recreational value. Existing conditions in the study area with respect to geology, seismicity, and soils apply to the Santa Fe Valley SPA as a whole and to individual tentative map areas. The following discussion focuses on the project site, except where site-specific data are available (in which case, the site-specific data are also discussed).

The regulatory setting for this section includes the following legislation:

Executive Order 11207. This order promotes coordination of federal programs affecting agricultural and rural area development and promotes consistency among federal departments and agencies.

Federal Soil Conservation Law (16 USGS 590a). By Congressional policy, this law "provides permanently for the control and prevention of soil erosion by preventive measures, including, but not limited to, engineering operations, methods of cultivation, growing of vegetation, and changes in land use."

Soil Conservation and Domestic Allotment Act (7 USGS 128). This Act mandates Congress to "conserve national resources, preventing the wasteful use of soil fertility . . . (and) preserving and maintaining the farm and ranch land resources in the national public interest."

Surface Mining and Reclamation Act (SMARA 1975). This Act requires the state geologist to classify, on the basis solely of geologic factors, and without regard to existing land use and ownership, the areas identified by the Office of Planning and Research, and other such areas specified by the board, as one of the following:

- areas containing little or no mineral deposits
- areas containing significant mineral deposits
- areas containing mineral deposits, the significance of which requires further evaluation

The State Mining and Geology Board has subsequently defined the above categories into Mineral Resource Zones (Kohler and Miller 1982).

Alquist-Priolo Earthquake Fault Zoning Act (1972). The purpose of this act is to regulate development near active faults to mitigate the hazard of surface fault rupture. Under this act, the State Geologist (Chief of the Division of Mines and Geology) is required to delineate earthquake fault zones along known active faults in California.

Uniform Building Code (UBC) Chapter 70 (1994). The purpose of this code is to protect life, limb, and property by regulating grading projects on private property.

San Diego County Grading Ordinance, Section 87.211. The Director of Public Works may deny a grading permit where the proposed construction would interfere with an existing drainage course causing damage to adjacent property, create an unreasonable hazard, or result in the deposition of debris on any public way.

San Diego County Grading Ordinance, Section 87.401-87.417. The County has established a series of design standards to minimize erosion of cut and fill slopes. These requirements vary according to size, percent slope, soils, and fill materials used. Slopes must be protected from runoff by berms, swales, or brow ditches unless the County states otherwise. All such protective systems must be approved by the County.

Previous Geologic/Geotechnical Analyses

A geologic reconnaissance and limited geotechnical evaluation were completed for the project site by Ninyo & Moore, Inc. (1992). Methods and methodology for this study included literature review, geologic reconnaissance and mapping, engineering geologic and geotechnical analysis of data obtained, and preparation of a report presenting preliminary findings, conclusions, and recommendations. Based on the results of the geologic

reconnaissance and limited geotechnical evaluation, Ninyo & Moore concluded that development within the project site was feasible from a geotechnical perspective.

Individual geotechnical studies were also performed for the areas of the SPA where tentative subdivision maps are proposed. A soil and geologic reconnaissance was performed for an earlier version of the proposed McCrink Ranch subdivision (Geocon 1989). The scope of work for this investigation included field mapping, literature review, and engineering geologic/geotechnical analysis. Based on the results of the reconnaissance, Geocon concluded that no soil or geologic conditions were observed that would preclude development of the property. A review of the current tentative map for the McCrink subdivision concluded that the findings, conclusions, and recommendations presented in the 1989 Geocon report remain applicable for the McCrink subdivision as currently proposed (Geocon 1995b).

A similar soil and geologic reconnaissance were also performed for an earlier version of the proposed Balcor subdivision (Geocon 1985). No soil or geologic conditions were observed that would preclude development of the property. This study did not address site conditions at the proposed Seaton subdivision, which is encompassed by the proposed Balcor subdivision. A subsequent review indicated that potential geotechnical constraints to future development are not unusual and should not result in extraordinary development costs if excavations within hard rock are kept to a minimum (Geocon 1995a). A rock rippability study was also performed for applicable portions of the Balcor subdivision tentative map area by (Geocon 1993). A soil and geologic reconnaissance were performed for the Bernardo Lakes development (Geocon 1995c).

The Ninyo & Moore (1992) report entitled, "Geologic Reconnaissance and Limited Geotechnical Evaluation, Santa Fe Valley Specific Plan, San Diego County, California", was prepared as part of the Santa Fe Valley Specific Plan Environmental Database/Existing Conditions Report (Ogden 1993). The Ninyo & Moore report, along with the project-specific geotechnical reports listed above, is available at the County of San Diego, Department of Planning and Land Use (5201 Ruffin Road, Suite B, San Diego, CA 92123). Additional data sources used for the following analysis include Hart (1994), Kohler and Miller (1982), SCS (1973), Greensfelder (1974), Jennings (1977, 1992), USGS (1980), Ploessel and Slossen (1974), Seed and Idris (1982), and Norris and Webb (1990).

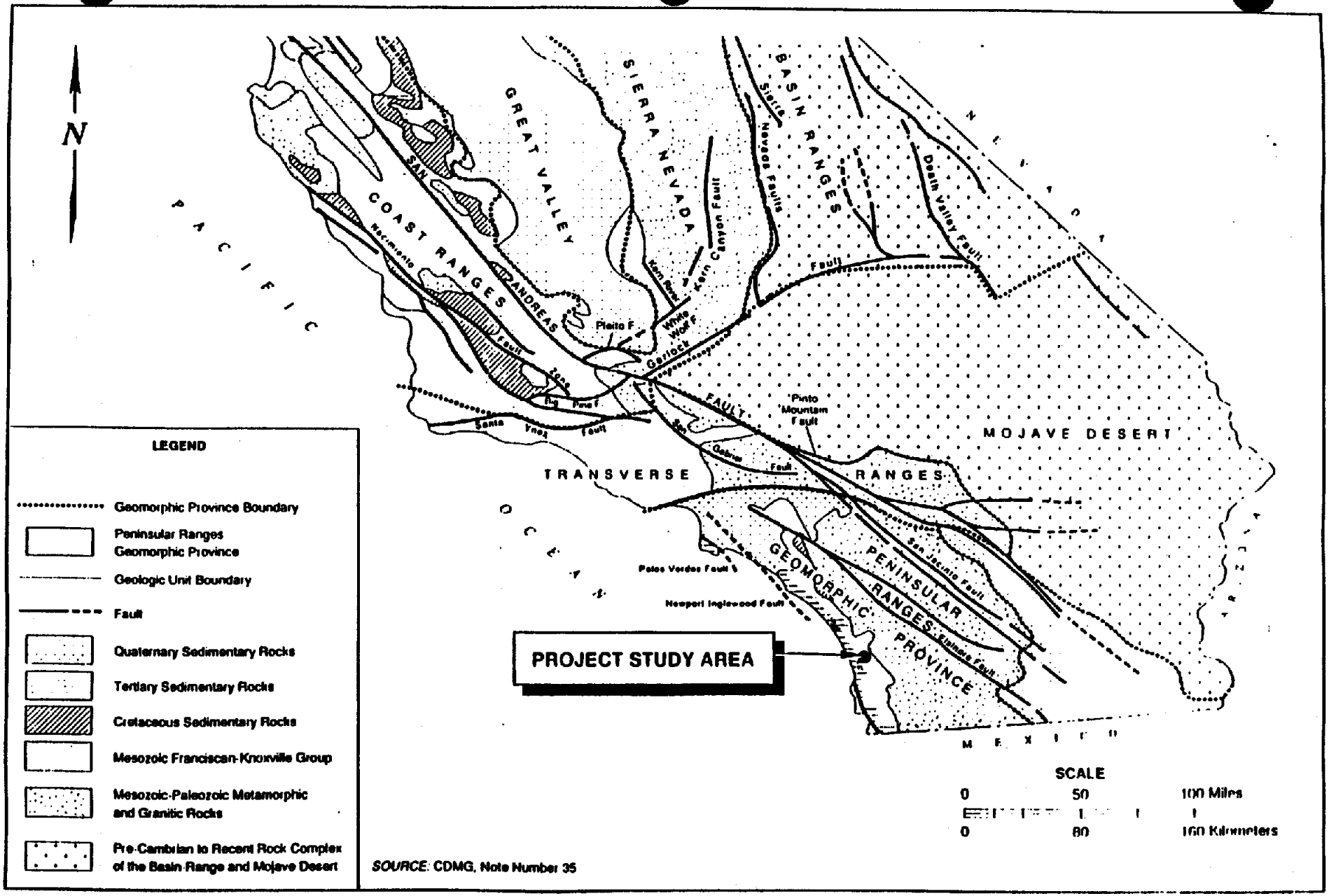
Regional Topographic/Structural Setting

The project study area, which includes the area encompassed by the SPA, is situated in the coastal section of the Peninsular Ranges Geomorphic Province (Figure 4.9-1). This province can generally be separated into two distinct topographic components, including a series of northwest-trending mountain ranges, foothills, and intervening valleys which comprise the eastern and central portions of the province, and the coastal plain, which comprises the western portion of the province. The coastal plain consists of numerous marine and non-marine terraces that are dissected by stream valleys. The Peninsular Ranges Geomorphic Province is traversed by a group of sub-parallel, northwest-trending faults and fault zones.

Site Topographic and Geologic Setting

Site topography is characterized by gently rolling hillsides in the central and southern portions of the site and steep canyons and ridges in the northeastern portion of the site. Elevations within the project site range from approximately 80 feet above mean sea level (msl) along Lusardi Canyon in the southwest quarter of the site to approximately 1,110 feet msl on a peak in the east-central portion of the site. Several drainages traverse the site; these drainages empty into the San Dieguito River and Lusardi Creek. The San Dieguito River forms most of the site's northern and western boundary and represents the dominant geomorphic feature of the Santa Fe Valley site.

Figure 4.9-2 presents the geologic time scale, which indicates the various geologic time periods and their age relationships. The site is underlain by basement rocks consisting of Jurassic metavolcanic rocks and Cretaceous granitic rock. Basement rocks are in turn overlain by sedimentary rocks ranging from Cretaceous to Pleistocene in age. These units are capped by geologically young (i.e., less than 10,000 years old) surficial deposits of artificial fill, topsoil, colluvium, and alluvium. Figure 4.9-3 illustrates the approximate distribution of geologic units within the study area. The following paragraphs contain brief descriptions of these geologic units.



SOURCE: CDMG, Note Number 35

4.9-3

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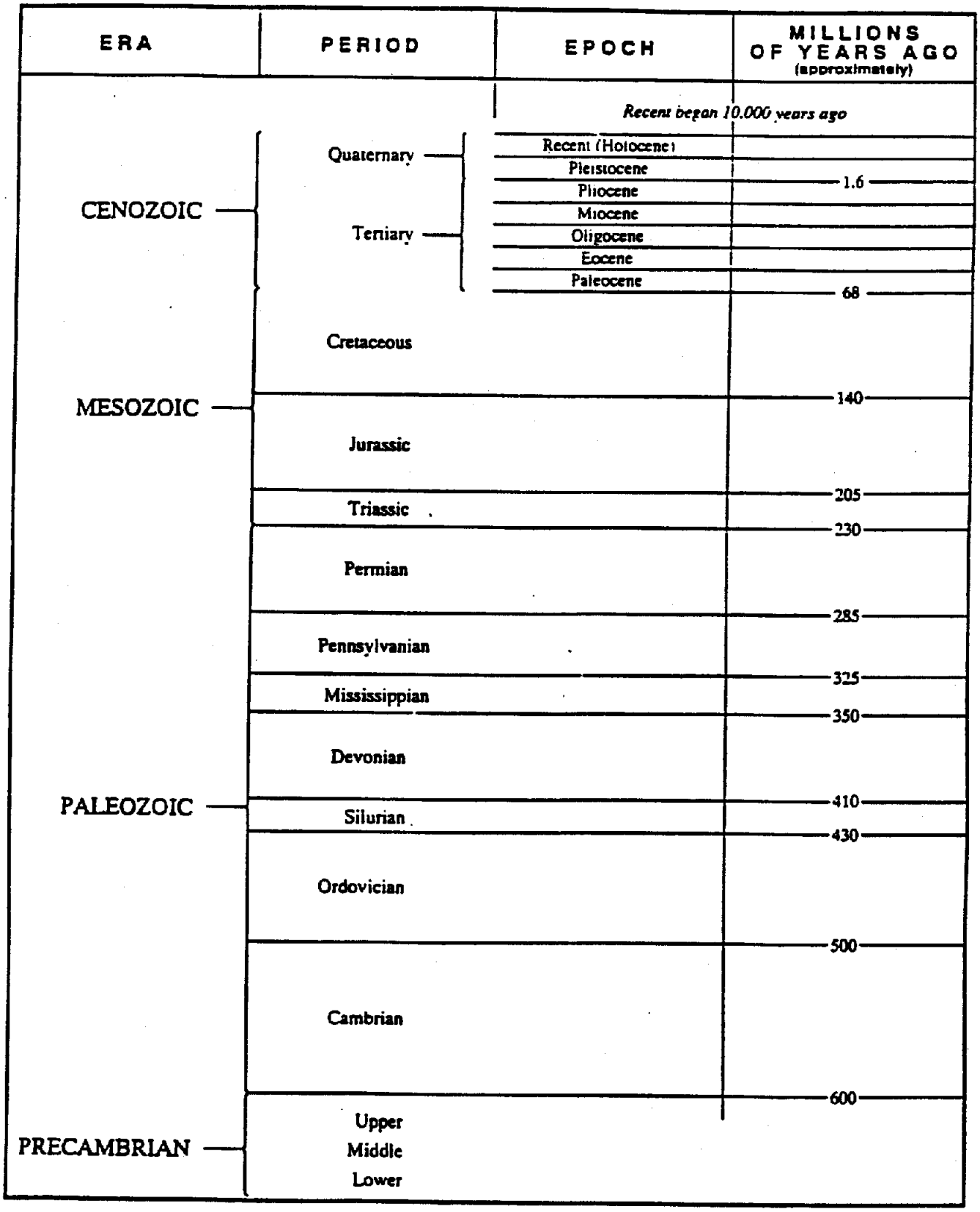
Peninsula Ranges Geomorphic Province

FIGURE 4.9-1



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Geologic Time Scale

FIGURE 4.9-2

Santiago Peak Volcanics (Jsp)

Jurassic-age Santiago Peak Volcanics are the predominant geologic unit at the site. These rocks consist generally of dense metavolcanic rock broken by a series of subparallel joint patterns. Weathering and decomposition of near-surface exposures result in highly expansive clayey topsoil.

Granitic Rock (Kgr)

Intrusions of Cretaceous granitic rock occur in the northern portion of the site. This unit consists of dense granitic rock ranging in composition from quartz diorite to tonalite.

Lusardi Formation (Kl)

The Lusardi Formation is exposed in the southwestern portion of the site and unconformably overlies Cretaceous granitic rock. This Cretaceous sedimentary unit is well exposed in Lusardi Canyon. The Lusardi Formation generally consists of a dense conglomerate composed of well-rounded cobbles and occasional boulders in a moderately well-cemented sandstone matrix.

Delmar Formation (Td)

The Eocene-age Delmar Formation underlies portions of the southern and western areas of the site and consists generally of light gray to olive sandy claystone and clayey sandstone. As discussed below, this unit is prone to landslides where bedding conditions are adverse. In addition, this unit may be prone to shrink swell.

Within the proposed Balcor subdivision, topsoil overlying the Delmar Formation was found to be composed of highly expansive silty clays up to 3 feet thick (Geocon 1985).

Stadium Conglomerate (Tst)

The Stadium Conglomerate has been mapped in limited areas in the southern portion of the proposed McCrink Ranch subdivision (Geocon 1989). This unit is Eocene in age and consists of very dense, clayey sands and cobbles. The thickness of the Stadium

Conglomerate within the McCrink Ranch tentative map area appears to be on the order of 15 to 25 feet.

Torrey Sandstone (Tt)

The Eocene-age Torrey Sandstone appears to interfinger with the Delmar Formation within portions of the proposed McCrink Ranch and Balcor subdivisions (Geocon 1985, 1989). The Torrey Sandstone generally consists of white to light-brown, medium- to coarse-grained sandstone. In general, the Torrey Sandstone possesses high shear strength, low expanse potential, and low compressibility; however, a lack of significant cohesion within the sandstone renders the formation susceptible to erosion, particularly on exposed slopes (Geocon 1985, 1989).

Within the Balcor subdivision tentative map area, topsoil developed on the Torrey Sandstone was found to be composed of highly expansive silty clays up to 3 feet thick (Geocon 1985).

Mission Valley Formation (Tmv)

The Eocene-age Mission Valley Formation underlies isolated portions of the southern area of the site and overlies the Delmar Formation. The Mission Valley Formation consists of dense sandstone with interbedded claystones and siltstones. Localized concretions (spherical cemented rock bodies) and cemented zones may be present in this unit.

Terrace Deposits (Qt)

Quaternary-age terrace deposits are present along and upslope of the San Dieguito River in the western portion of the site. This unit generally consists of a poorly to moderately cemented silty sandstone with abundant gravels and cobbles.

Landslides (Qls)

Topography indicative of shallow landslides was observed along several of the drainage courses in the south-central portion of the site (Ninyo & Moore, 1992). These features may be the result of failures of weak material within the Delmar Formation along oversteepened slopes.

Alluvium (Qal)

Geologically young (less than 10,000 years before present) alluvium occurs in stream channels and drainage courses across the site. The thickness of alluvium in these areas is not known. Alluvium within the study area generally consists of clayey sand and sandy clay with occasional gravels and cobbles.

Topsoil/Colluvium (Not a mapped unit)

A thin veneer of topsoil was observed over the underlying geologic units in undisturbed portions of the project area. Varying thicknesses of colluvium (i.e., material derived from downslope movement) are present on many of the hillsides within the study area. This material consists of loose clayey sand and soft sandy clay.

Stream terrace deposits intermixed with colluvium were found to cover a relatively large area within the northwestern portion of the proposed Balcor subdivision (Geocon 1985). The colluvial and terrace deposits at this location were found to be composed of relatively loose, porous, clayey sands and sandy clays with numerous angular and subangular rock fragments derived from the nearby Santiago Peak Volcanics (Jsp). These sediments have accumulated following flood episodes of the San Dieguito River or by slow downslope movement from more elevated areas. These sediments are generally poorly consolidated and susceptible to settlement when subjected to an increase in vertical loads as would result from the placement of fill or structures.

Artificial Fill (af)

Many areas of artificial fill are present in the study area. A majority of these fills are earthen dams or other fills placed to alter drainage courses. Other fills within the study area include existing roadway embankments. Artificial fill within the study area appears to be derived from onsite materials (Ninyo & Moore 1992).

Within the proposed Balcor subdivision, artificial fill observed was generally of limited depth and extent and was associated with several unimproved roads and a breached earthen dam embankment built across the San Dieguito River. A significant amount of fill soils

was also found to be associated with the San Diego Aqueduct, which crosses the property (Geocon 1985).

Four earth fill dams were observed on the McCrink Ranch property. It is not known whether these dams were placed under engineered conditions (Geocon 1989).

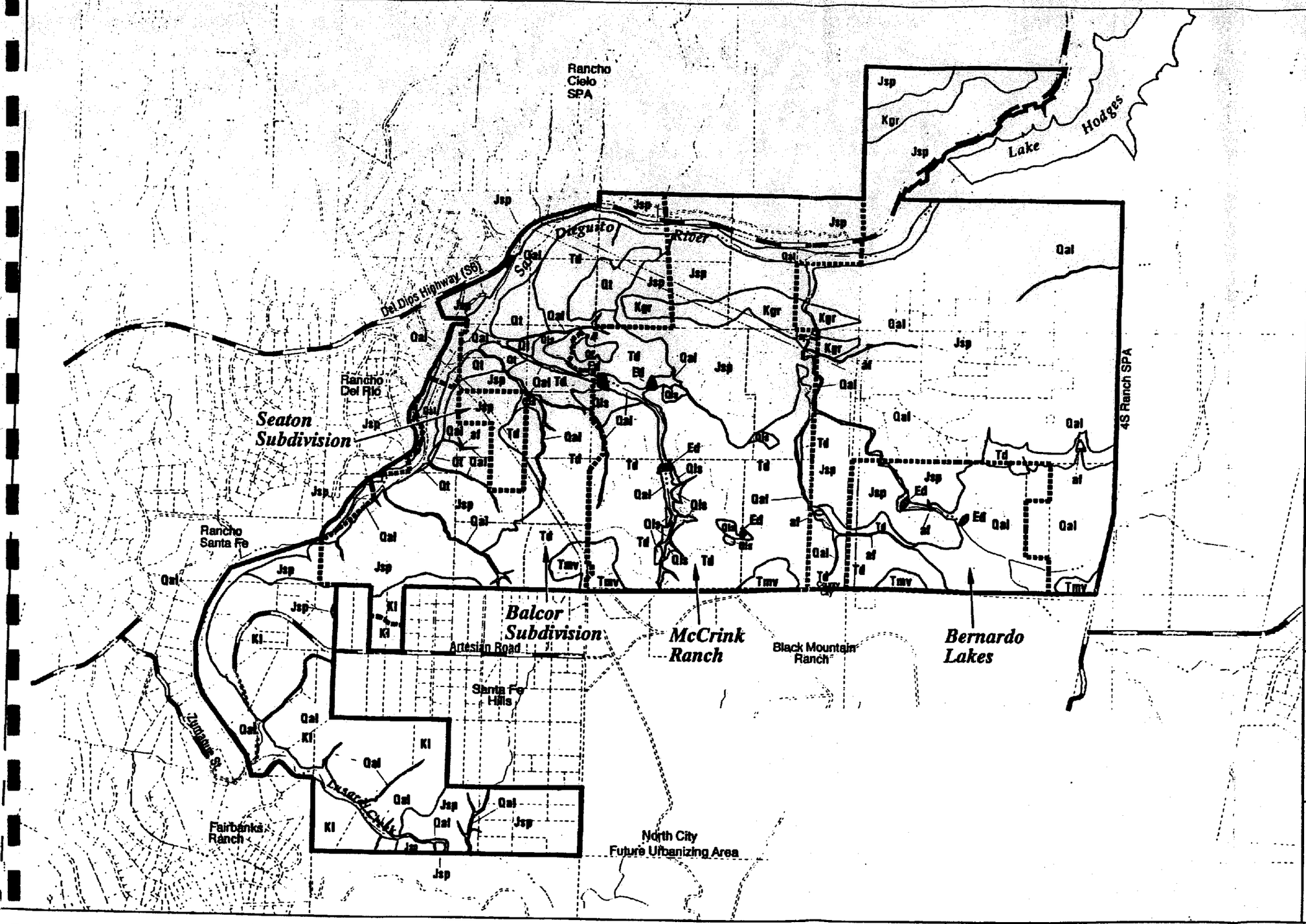
Soils

The soil associations within the study area were surveyed and mapped by the Soil Conservation Service (SCS) in 1973. Figure 4.9-4 depicts the soil associations within the Santa Fe Valley SPA. Table 4.9-1 presents brief soil descriptions as well as some of the characteristics that are generally of concern from a project design standpoint. Soils mapped within the study area consist of loams (i.e., sand/silt/clay mixtures), sands, clay loams, silt loams, and cobbly loams. Several broad soil types are present, including soils associated with geologically young alluvium (Riverwash, Tujunja, and Salinas soil series), soils developed on marine terrace deposits (Olivenhain series), soils developed on sedimentary rock units (Huerhuero, Diablo, and Linne series), soils developed on metavolcanic and granitic rock (Auld and San Miguel-Exchequer series), and soils associated with steep slopes (Terrace Escarpments, Steep Gullied Land).

The shrink-swell behavior of soils within the study area ranges from low to high. The erodability of soils within the study area ranges from slight to severe.

Ground Water

Ground water is discussed in detail in Section 4.8, Hydrology. No springs or seeps were observed during the site reconnaissance (Ninyo & Moore 1992). Ground water is likely present within the project area, particularly along the contact between surficial deposits and rock formations, and in the alluvium along drainage courses. Water was observed flowing in the San Dieguito River, and standing water was observed in a reservoir pond in the central portion of the project site. It is likely that a permanent shallow ground-water table exists within the San Dieguito River floodplain and directly adjacent areas. Local seasonal fluctuations in ground-water levels may occur due to variations in surface topography, subsurface geologic conditions, rainfall, irrigation, and other factors.



Geologic Formation

af	Fill
Ed	Earth Dam
Qal	Alluvium
Qls	Possible or Suspected Landslide
Qt	Terrace Deposits
Tmv	Mission Valley Formation
Td	Delmar Formation
Kl	Lusardi Formation
Kgr	Granitic Rock
Jsp	Santiago Peak Volcanics

NOTE: All locations are approximate

SOURCES: MINYO AND MOORE 1992
GEOCON 1985, 1989, 1995

- Tentative Map
- Remainder of Specific Plan Area
- Tentative Map Boundary
- Geologic Contact (Approximate)

Base Map Legend

- Specific Plan Boundary
- Parcel Boundaries
- Easement
- Major Road
- USGS 'Blue Line' Stream

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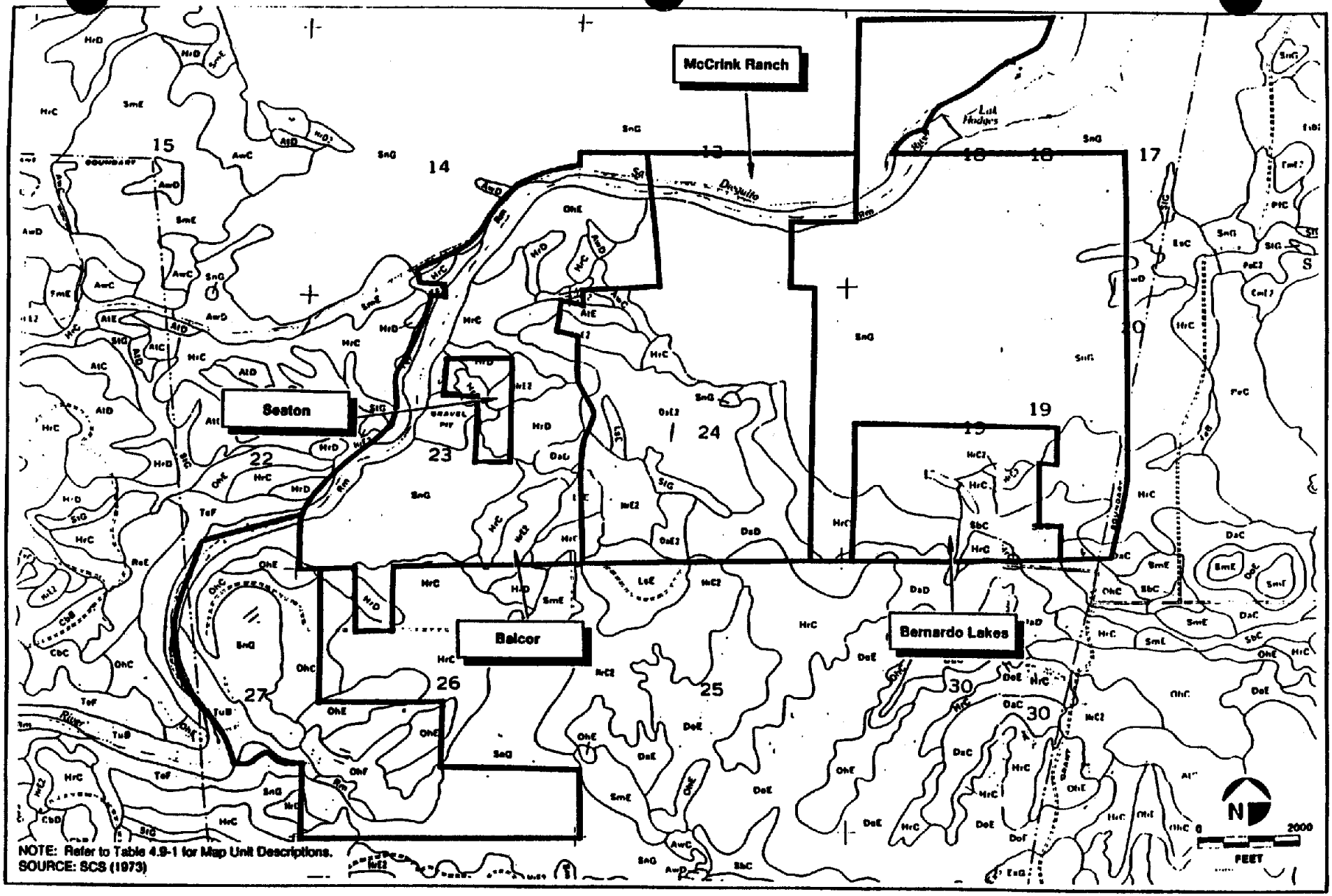
Geologic Formations

FIGURE

4.9-3



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Soils Map

FIGURE 4.9-4

Table 4.9-1

DESCRIPTION OF ONSITE SOIL PROPERTIES

Soil Series	Map Unit(s)	Physical Characteristics	Shrink-swell Potential	Erodability
Riverwash	Rm	Excessively drained and rapidly permeable. Sandy, gravelly, and cobbly material. Occupies intermittent stream channels.	Low	Severe
Olivenhain	Ohe	Well-drained, moderately deep to deep cobbly loams with cobbly clay subsoil. Formed on dissected marine terraces (Qt).	Moderate	Severe
Auld	AnC, AnD	Well-drained clays underlain by metavolcanic rock (Jsp).	High	Slight
Huerhuero	HrC, HrC2, HrE2, HrD	Moderately-well drained loams with clay subsoil developed on sandy marine sedimentary rocks.	High	Severe
San Miguel-Exchequer	SnG	Well-drained, shallow to moderately deep silt loams with clay subsoil, derived from metavolcanic and granitic rock (Jsp and Kg).	Low to High	Severe
Tujunja sand	TuB	Very deep excessively drained, derived from granitic alluvium (Qal).	Low	Severe
Diablo	DaC, DaD, DaE2	Well-drained, moderately deep to deep clays derived from sandstone and shale.	High	Slight to Moderate
Salinas	SbC	Well-drained clay loams formed in alluvium (Qal).	Moderate	Moderate
Linne	LsE	Well-drained, moderately deep clay loams derived from sandstone and shale.	Moderate	Moderate
Terrace escarpments	TeF	Loamy or gravelly soils developed on steep terrace escarpments between floodplains or on the steep sides of drainages.	Variable	Severe
Steep gullied land	StG	Strongly sloping to steep areas actively eroding into alluvium or decomposed rock	Variable	Severe

Source: SCS 1973

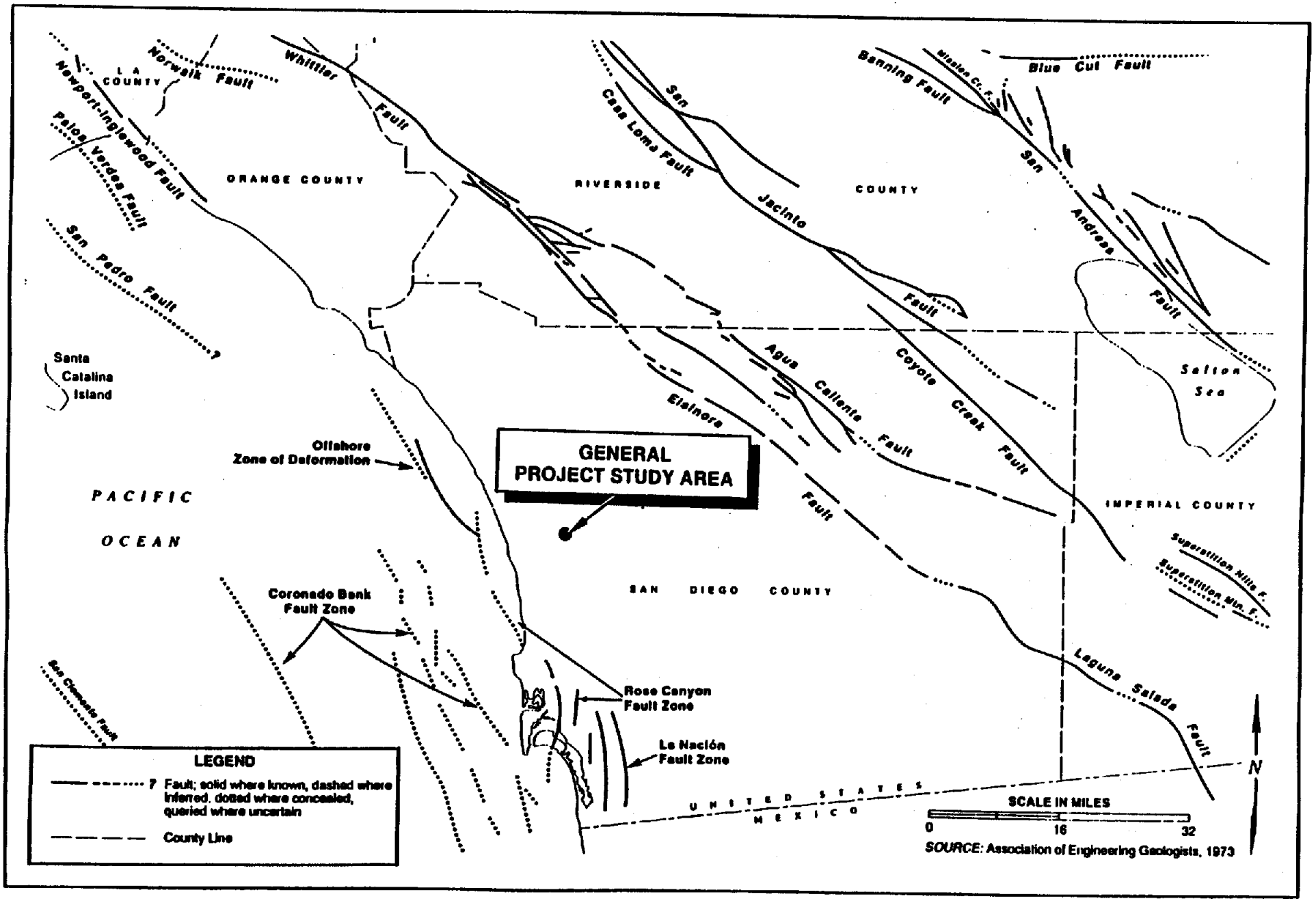
Tectonics and Seismicity

The Peninsular Ranges Province appears to be an uplifted and westward tilted block. The eastern flank is the highest and most rugged part, with altitudes gradually decreasing toward the west.

Tectonically, the province is transected by numerous northwest-trending, right-lateral strike slip fault zones (Jennings 1992). These fault zones subdivide the province into several northwest-trending mountain ranges and intervening valleys. The San Jacinto, Elsinore, Newport-Inglewood, Palos Verdes, and Rose Canyon fault zones are the predominant fault zones within the province (Figure 4.9-5).

The California Division of Mines and Geology (CDMG) classifies faults as either active or potentially active, according to the Alquist-Priolo Earthquake Fault Zone Act of 1972 (Hart 1994). A fault which has exhibited surface displacement within the Holocene Epoch (the last 11,000 years) is defined as active by the CDMG. The CDMG suggests that this definition be used to evaluate faults located within a 60-mile radius of a project site. A fault which has exhibited surface displacement during Quaternary time (i.e., within the past 1.6 million years) but which cannot be proven to have moved or not moved during Holocene time is defined as potentially active. Based on a review of published geologic maps of the area, Ninyo & Moore (1992) concluded that no active faults have been mapped within the project area boundaries. Review of an updated fault activity map of California (Jennings, 1992) likewise indicates that no active faults have been mapped within the study area boundaries.

The project area is located in a highly active seismic region. Figure 4.9-5 presents the locations of regional and local fault zones. Several of the faults and fault zones in southern California are considered active by the CDMG, and Alquist-Priolo earthquake fault zones (A-P zones) have been established for the majority of these faults and fault zones. A-P zones are areas established by the CDMG along and parallel to the traces of active faults. The delineation of A-P zones on topographic maps is the responsibility of the CDMG. The purpose of the A-P zones is to prohibit the location of structures on the traces of active faults, thereby mitigating potential damage due to fault surface rupture.



SOURCE: Association of Engineering Geologists, 1973

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Regional Fault Map

FIGURE 4.9-5

The seismic parameters for active faults most likely to affect the study area are presented in Table 4.9-2. The most significant probable seismic events likely to affect the study area would be earthquakes of Richter magnitude 6.5 and 7.2 associated with the Rose Canyon fault zone and the Elsinore Fault zone, respectively (Ninyo & Moore 1992).

The corresponding Modified Mercalli Scale, which qualifies earthquake intensities in terms of potential effects on people and structures, is provided in Table 4.9-2. An earthquake associated with the Rose Canyon and Elsinore fault zones could result in a Modified Mercalli intensity of VII to VIII (USGS 1980). A detailed explanation of the effects associated with the Modified Mercalli Scale of Earthquake Intensities is provided in Table 4.9-3.

Geologic Hazards/Constraints

Geologic hazards and geotechnical constraints are those aspects of the geologic/seismic environment that have the potential to damage or otherwise affect the proposed project. Geologic hazards for the proposed project include ground acceleration/shaking, ground rupture, liquefaction, landslides/rockfalls, potentially problematic soils, and potential earth dam instability. Due to their ability to affect development of the proposed project, these hazards are also geotechnical constraints. Areas of potential excavation difficulty underlain by hard rock (e.g., Santiago Peak Volcanics (Jsp) or Cretaceous Granitics (Kg)) are considered a geotechnical constraint but not a geologic hazard. Figure 4.9-6 depicts principal geologic hazard and geotechnical constraint areas for the proposed project. The following paragraphs discuss these hazards and constraints.

Ground Acceleration and Ground Shaking

Ground acceleration is an estimation of the peak bedrock or ground motion associated with a specific earthquake. It is expressed in terms of "g" forces, where "g" equals the acceleration due to gravity. Acceleration can be measured directly from seismic events or calculated from magnitude and fault distance data. The seismic hazard most likely to be detrimental to the study area is ground shaking resulting from a large earthquake generated on either a major regional or local fault. Large earthquakes along more extensive faults (e.g., the San Andreas fault zone) can produce ground accelerations with longer wavelengths and durations than smaller faults, even though the latter structures may be closer and thus generate greater peak acceleration values. The wavelength, amplitude, and

Table 4.9-2

SEISMIC PARAMETERS FOR MAJOR ACTIVE FAULTS

Fault	Maximum Probable Earthquake (Richter Magnitude)[1]	Distance From Fault to Site[2] (mi)	Estimated Acceleration (g) Peak Ground[3]/ RHG[4]	Modified Mercalli Intensity[5]
Elsinore	7.2	23	0.23/0.23	VII - VIII
San Jacinto	6.6	46	0.06/0.06	V - VI
San Andreas (creep section)	7.5	72	0.05/0.05	V - VI
Newport-Inglewood	6.9	53	0.06/0.06	V - VI
Coronado Bank	6.2	25	0.10/0.10	VI - VII
Rose Canyon	6.5	11	0.28/0.18	VII - VIII
San Clemente	7.3	55	0.08/0.08	VI-VII
Palos Verdes Hills	6.5	52	0.04/0.04	V-VI

1 After Greensfelder (1974), Ninyo & Moore (1992). The Maximum Probable Earthquake is defined as the maximum earthquake likely to occur during a typical 100-year interval.

2 Jennings (1992)

3 Seed and Idriss (1982)

4 Ploessel and Slosson (1974)

5 USGS (1980), refer to Table 4.9-3 for explanation.

Notes: 1) Repeatable high ground acceleration values are generally given as 65 percent of peak ground acceleration values for sites within 20+ miles of an earthquake epicenter and approach 100 percent at greater distances.

Table 4.9-3

THE MODIFIED MERCALLI SCALE OF EARTHQUAKE INTENSITIES

If most of these effects are observed	*then the intensity is:*
Earthquake shaking not felt. But people may observe marginal effects of large distance earthquakes without identifying these effects as earthquake-caused. Among them: trees, structures, liquids, bodies of water sway slowly, or doors swing slowly.	I
Effect on people: Shaking felt by those at rest, especially if they are indoors, and by those on upper floors.	II
Effect on people: Felt by most people indoors. Some can estimate duration of shaking. But many may not recognize shaking of building as caused by an earthquake; the shaking is like that caused by the passing of light trucks.	III
Other effects: Hanging objects swing. **Structural effects:** Windows or doors rattle. Wooden walls and frames creak.	IV
Effect on people: Felt by everyone indoors. Many estimate duration of shaking. But they still may not recognize it as caused by an earthquake. The shaking is like that caused by the passing of heavy trucks, though sometimes, instead, people may feel the sensation of a jolt, as if a heavy ball had struck the walls. **Other effects:** Hanging objects swing. Standing autos rock. Crockery clashes, dishes rattle or glasses clink. **Structural effects:** Doors close, open or swing. Windows rattle.	V
Effect on people: Felt by everyone indoors and by most people outdoors. Many now estimate not only the duration of shaking but also its direction and have no doubt as to its cause. Sleepers wakened. **Other effects:** Hanging objects swing. Shutters or pictures move. Pendulum clocks stop, start or change rate. Standing autos rock. Crockery clashes, dishes rattle or glasses clink. Liquids disturbed, some spilled. Small unstable objects displaced or upset. **Structural effects:** Weak plaster and Masonry D* crack. Windows break. Doors close, open or swing.	VI
Effect on people: Felt by everyone. Many are frightened and run outdoors. People walk unsteadily. **Other effects:** Small church or school bells ring. Pictures thrown off walls, knicknacks and books off shelves. Dishes or glasses broken. Furniture moved or overturned. Trees, bushes shaken visibly, or heard to rustle. **Structural effects:** Masonry D* damaged; some cracks in Masonry C*. Weak chimneys break at roof line. Plaster, loose bricks, stones, tiles, cornices, unbraced parapets and architectural ornaments fall. Concrete irrigation ditches damaged.	VII
Effect on people: Difficult to stand. Shaking noticed by auto drivers. **Other effects:** Waves on ponds; water turbid with mud. Small slides and caving in along sand or gravel banks. Large bells ring. Furniture broken. Hanging objects quiver. **Structural effects:** Masonry D* heavily damaged; Masonry C* damaged, partially collapses in some cases; some damage to Masonry B*; none to Masonry A*. Stucco and some masonry walls fall. Chimneys, factory stacks, monuments, towers, elevated tanks twist or fall. Frame houses moved on foundations if not bolted down; loose panel walls thrown out. Decayed piling broken off.	VIII
Effect on people: General fright. People thrown to ground. **Other effects:** Changes in flow or temperature of springs and wells. Cracks in wet ground and on steep slopes. Steering of autos affected. Branches broken from trees. **Structural effects:** Masonry D* destroyed; Masonry C* heavily damaged, sometimes with complete collapse; Masonry B* is seriously damaged. General damage to foundations. Frame structures, if not bolted, shifted off foundations. Frames racked. Reservoirs seriously damaged. Underground pipes broken.	IX
Effect on people: General Panic. **Other effects:** Conspicuous cracks in ground. In areas of soft ground, sand is ejected through holes and piles up into a small crater, and, in muddy areas, water fountains are formed. **Structural effects:** Most masonry and frame structures destroyed along with their foundations. Some well-built wooden structures and bridges destroyed. Serious damage to dams, dikes and embankments. Railroads bent slightly.	X
Effect on people: General panic. **Other effects:** Large landslides. Water thrown on banks of canals, rivers, lakes, etc. Sand and mud shifted horizontally on beaches and flat land. **Structural effects:** General destruction of buildings. Underground pipelines completely out of service. Railroads bent greatly.	XI
Effect on people: General panic. **Other effects:** Same as for Intensity X. **Structural effects:** Damage nearly total, the ultimate catastrophe. **Other effects:** Large rock masses displaced. Lines of sight and level distorted. Objects thrown into air.	XII

*Masonry A: Good workmanship and mortar, reinforced, designed to resist lateral forces.
*Masonry B: Good workmanship and mortar, reinforced.
*Masonry C: Good workmanship and mortar, unreinforced.
*Masonry D: Poor workmanship and mortar and weak materials, like adobe.

duration of seismic shaking can all contribute to the destructive potential of individual earthquakes.

Table 4.9-2 lists the calculated ground acceleration parameters pertaining to known major active faults that have the potential to cause significant ground shaking. Based on the data in Table 4.9-2, the most significant seismic events likely to affect the study area would be associated with maximum probable earthquakes of Richter magnitude 6.5 and 7.2 along the Rose Canyon and Elsinore fault zones, respectively. The maximum probable earthquake (MPE) is the largest earthquake that is likely to occur along a given fault in any 100-year interval. Based on the seismic analysis performed for the project study area by Ninyo & Moore (1992), the estimated peak ground acceleration that could be produced by these events ranges from 0.23 g (for a MPE on the Elsinore fault zone) to 0.28 g (for a MPE on the Rose Canyon fault). These events could generate Modified Mercalli intensities of VII to VIII, potentially resulting in a variety of adverse effects on structures and facilities (USGS 1980; Table 4.9-3).

An additional potential concern involves the concept of repeatable high ground acceleration (RHGA) at the project site. Evaluation of RHGA involves consideration of the full extent of ground acceleration values and durations as opposed to a single high peak. The basic rationale of RHGA is that a single peak of intense motion (peak acceleration) may contribute less to cumulative damage potential than several cycles of less intense shaking (Ploessel and Slossen 1974). RHGA is generally given as 65 percent of peak acceleration values for areas within 20 miles of an earthquake epicenter, and approaches 100 percent at greater distances based on the more rapid attenuation of peak bedrock acceleration (Ploessel and Slossen 1974). The estimated RHGA for the project study area ranges from 0.23 g (for a MPE on the Elsinore Fault Zone) to 0.18 g (for a MPE on the Rose Canyon Fault).

Fault Rupture

Fault rupture is defined as the physical displacement of surface deposits in response to fault movement. The project study area is not known to be directly underlain by active or potentially active faults or fault-related features; therefore, no potential hazard due to fault rupture is known to exist.

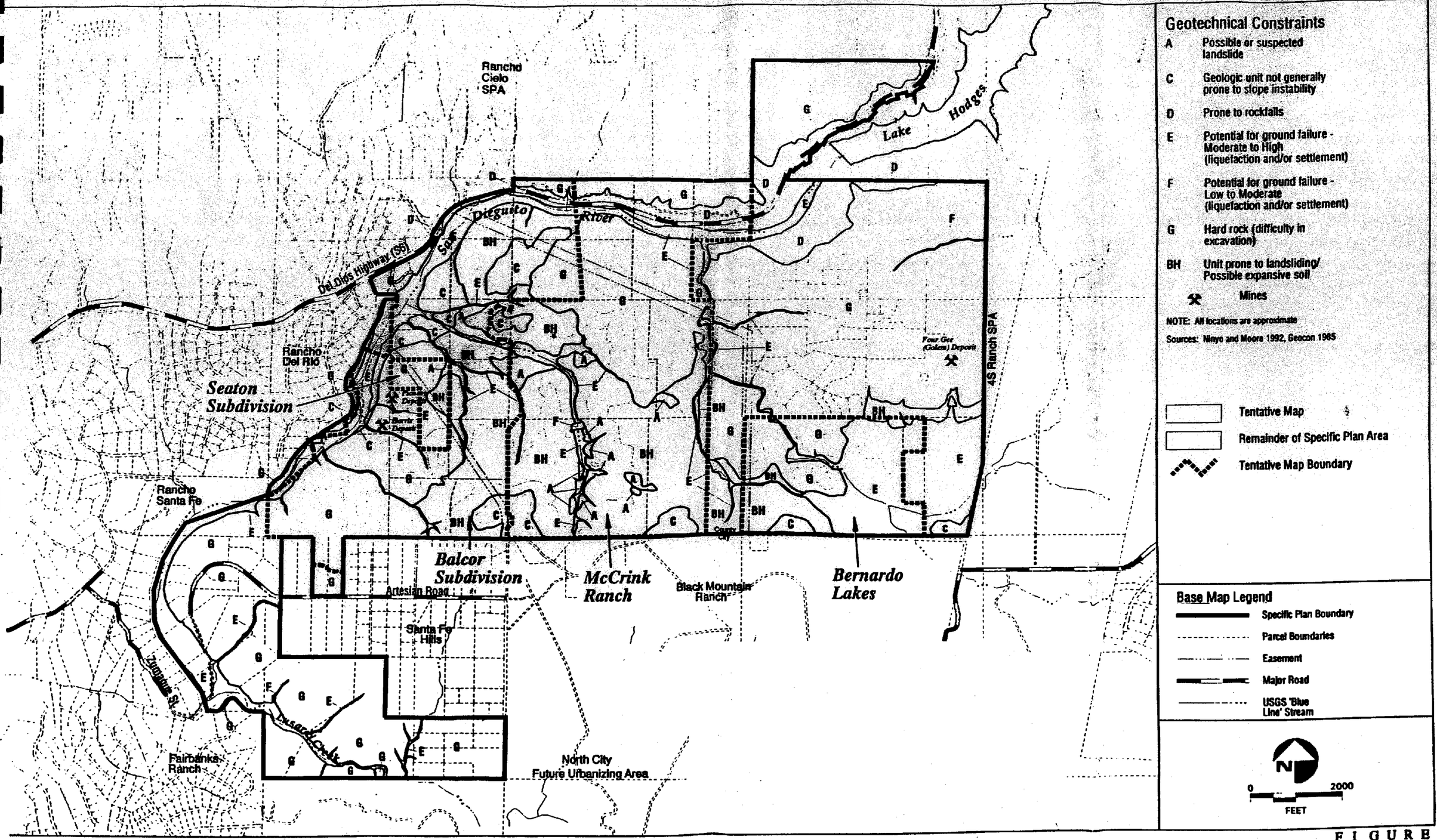

FIGURE 4.9-6

Geotechnical Constraints

Liquefaction

Liquefaction is defined as the transformation from a solid to a liquid state as a result of increased pore pressure and reduced effective stress due to earthquake vibrations. Generally, liquefaction requires loose, unconsolidated silts or sands at or near the groundwater table. Liquefaction susceptibility is primarily a function of sediment type, age, density, depth of sediment, and depth to ground water. Research and historical data indicate that sediments with clay contents of less than 20 percent which are saturated by a relatively shallow ground-water table are most susceptible to liquefaction (Ninyo & Moore 1992). Generally, the liquefaction susceptibility decreases as the depth to ground water increases.

Locations throughout the study area which may be susceptible to liquefaction include the San Dieguito River drainage, various tributary drainages, and the broad floodplain located in the southeastern portion of the study area (Unit E, Figure 4.9-6). These areas are underlain by alluvium that may be susceptible to liquefaction (Ninyo & Moore 1992).

Landslides/Rockfalls

Topography indicative of shallow landslides was observed along several of the drainage courses in the west-central and south-central portions of the site (Ninyo & Moore 1992). These topographic features may be the result of failures of weak material within the Delmar Formation along stream banks. The general outcrop pattern of the Delmar Formation is shown in Figure 4.9-6 (Unit BH) as prone to landsliding.

Rockfall-prone areas include those areas adjacent to the San Dieguito River beneath steep slopes (Unit D, Figure 4.9-6).

Excavation Difficulty

Excavation may be difficult in areas underlain by Cretaceous Granitics (Kg), Santiago Peak Volcanics (Jsp), and Lusardi Formation (Kl). The general area shown as Hard Rock (difficulty in excavation) in Figure 4.9-6 (Unit G) corresponds to the outcrop area of these three rock units.

Several seismic traverses were performed to aid in evaluating rippability characteristics of metavolcanic rock at the McCrink Ranch property (Geocon 1989). For mass grading, rock materials with seismic velocities of less than 4,500 feet per second (fps) are generally rippable with a D9 Tractor equipped with a single shank hydraulic ripper. In general, the metavolcanic rock was found to be rippable only in the upper 4 to 10 feet. Excavations deeper than 7 feet in the Santiago Peak Volcanics would likely require preblasting (i.e., blasting prior to ripping) (Geocon 1989). Below these depths, seismic velocities were in excess of 4,500 fps; therefore, the metavolcanic rock was not considered rippable and blasting would probably be required.

A rock rippability study was also prepared for the Balcor subdivision (Geocon 1993). Seventeen seismic refraction traverses were conducted to evaluate rippability characteristics of variably weathered Santiago Peak Volcanics (metavolcanic rock) underlying areas of anticipated development. Rippability characteristics of the metavolcanic rock were found to be highly variable across the site. The approximate thickness of rippable rock was found to vary from 2 feet to greater than 30 feet.

Potentially Problematic Soils

As shown in Table 4.9-1 and Figure 4.9-4, many of the soils within the project site possess a moderate to severe erosion potential and a moderate to high shrink-swell potential. Within the proposed Balcor subdivision, topsoil developed on the Torrey Sandstone and the Delmar Formation is composed of highly expansive silty clays up to 3 feet thick (Geocon 1985). In addition, weathering and decomposition of near-surface exposures of metavolcanic rock and sedimentary rock throughout the project site result in highly expansive clayey topsoil (Table 4.9-1).

Soils formed on dissected marine terrace deposits (Qt. Figure 4.9-3) exposed in the western portion of the Santa Fe Valley SPA possess a severe erosion potential (SCS 1973). Exposures of the Torrey Sandstone in the central and western portions of the Santa Fe Valley SPA (i.e., within the proposed Balcor and McCrink Ranch subdivisions) typically lack adequate cohesion, which renders this formation susceptible to rapid erosion (Geocon 1985, 1989).

Loose, porous, well-graded soils (especially those containing oversize materials) can be subject to settlement and differential settlement (i.e., varying degrees of settlement over

short distances). These effects can be accentuated by cut and fill operations, and are an important concern for structural integrity. A number of other mechanisms may also produce soil settlement, including tectonic subsidence, hydroconsolidation (saturation of dry, unconsolidated sediments), significant withdrawal of fluids from porous media, or collapse of natural or man-made subsurface cavities.

Loose, unconsolidated alluvium underlying the San Dieguito River drainage and other drainages within the project study area would also be susceptible to settlement under applied loads. Unconsolidated, settlement-prone alluvium may also be present in the area of the broad floodplain located in the eastern portion of the Bernardo Lakes property located in the southeastern portion of the project site (Unit E, Figure 4.9-6).

Mineral Resources

Aggregate Resources

A mineral land classification for aggregate minerals was completed for the western portion of San Diego County by the CDMG (Kohler and Miller 1982). Since aggregate resources are generally utilized close to their source, areas containing significant aggregate mineral resources and users of the resource are generally referred to as production consumption (P-C) regions. The San Diego P-C region was determined to be the western third of the county, which contained the metropolitan area and the areas where urbanization was expected to occur within 10 to 30 years. Also included in the P-C region were areas that currently provide or are expected to provide mineral materials to the urban or urbanizing areas of the county.

The CDMG has generated a series of mineral resource zone (MRZ) classifications to identify mineral potentials. For the mineral land classification of San Diego, MRZ designations were made throughout the P-C region. The MRZ designations are outlined below:

- MRZ-1. Areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little likelihood exists for their presence.

- MRZ-2. Areas where adequate information indicates that significant mineral deposits are present or where it is judged that there is a high likelihood for their presence.

- MRZ-3. Areas containing mineral deposits, the significance of which cannot be evaluated from available data.

- MRZ-4. Areas where available information is inadequate for assignment to any other MRZ classification.

The project study area has been classified by the CDMG as MRZ-3. Aggregate resources within the study area consist of sand and gravel associated with the San Dieguito River and sedimentary rock formations (e.g., Terrace deposits, Mission Valley Formation, Lusardi Formation), and basement rock materials (e.g., Santiago Peak Volcanics, Cretaceous Granitics). Blasting and/or crushing would be required before these materials could be used as sand and gravel aggregate. This process is often not economically feasible and is not generally implemented until all of the more accessible aggregate has been recovered.

Non-aggregate Resources

Three previously mined deposits of pyrophyllite have been identified within the study area (Weber 1963; Ninyo & Moore 1992). Pyrophyllite (hydrous aluminum silicate) is a soft, micaceous mineral similar to talc and has been mined in the eastern and western portions of the site. The Four-Gee (Golem) pyrophyllite deposit is located northeast of the Bernardo Lakes property. The Harris and Pioneer deposits are also located in the western portion of the Balcor property (Figure 4.9-6). Mining operations at these sites have not been active since the 1960s.

Pyrophyllite occurs within the study area in hydrothermally altered layers of the Santiago Peak Volcanics (Jsp). Known pyrophyllite deposits in San Diego County occur only in a small area which includes the project area (Weber 1963).

The Pioneer Mine was developed in the largest deposit in the area composed almost entirely of pyrophyllite. Harris and Four-Gee deposits, located about 250 yards south-southwest of the Pioneer deposit and two miles east of the Pioneer deposit, respectively, are composed of pyrophyllite-quartz mixtures. Pyrite and its alteration products, yellow-

brown hydrous iron oxide minerals, are widespread and constitute a deleterious (i.e., harmful) impurity. These impurities prevented nearly all pyrophyllite mined in San Diego County from being used in ceramics or as an extender in paints. Due to the presence of such impurities, pyrophyllite deposits in San Diego County have been considered to be low-quality deposits applicable for use only as carriers for insecticides.

4.9.2 Specific Plan Area Impacts

Geology, seismicity, and soils impacts resulting from the proposed project include the potential for ground shaking, liquefaction, landslides, rockfalls, soils impacts, and mineral resource impacts. Each of these impacts is discussed separately below. Impacts associated with failure of the existing/proposed earth dams located on the McCrink and Bernardo Lakes properties are discussed in Sections 4.8.5.1 and 4.8.5.4, respectively.

Criteria for Significance Determination

Geology, seismicity, and soils impacts are evaluated according to the criteria listed below.

- Ground shaking impacts to the proposed project would be significant if project components are not designed and constructed to withstand the ground acceleration and subsequent ground shaking associated with a maximum probable earthquake (MPE) on the Rose Canyon or Elsinore fault zones.

- Impacts caused by liquefaction would be significant for sites underlain by a near-surface, ground-water table and sediment consisting of loose, unconsolidated fine to medium-grained sand, silty sand, or sandy silt.

- Impacts caused by landslides would be significant where steep, lithologically weak, unstable slopes or existing landslides are present. Impacts from rockfalls would be significant in rockfall-prone areas where residential or commercial development is planned.

- Impacts caused by problematic soils would be significant in areas where soils exhibit moderate to high erosion potential, moderate to high shrink-swell potential, or in settlement-prone areas underlain by unconsolidated alluvium or landslide debris.

- Impacts to mineral resources would be significant if development of the proposed project rendered significant mineral resources inaccessible to mining and recovery.

Impact Analysis

Ground Shaking

Ground shaking impacts caused by a major earthquake could include damage to structures and utilities, damage or loss of infrastructure, seismically induced slope failures, liquefaction, and seismically induced settlement. As discussed above, the peak ground acceleration at the site that could be generated by a MPE associated with the Rose Canyon or Elsinore fault zones ranges from 0.23g to 0.28g. The design for the proposed project would incorporate a number of measures to reduce potential impacts related to ground shaking, including adherence to guidelines from the Uniform Building Code and San Diego County Grading Ordinance, and the use of appropriate structural fill and foundation design pursuant to direction by a qualified geotechnical consultant. Assuming these standards are properly implemented, it is anticipated that all potential impacts related to seismic shaking could be reduced to insignificance.

Liquefaction

The actual potential for liquefaction in the project area can be rigorously assessed only with site-specific information such as boring log descriptions, ground-water measurements, and standard penetration test (SPT) results. Without actual ground-water elevations and subsurface soil profiles, the liquefaction potential can only be qualitatively assessed. More detailed analysis of liquefaction-prone areas should be completed prior to final project design. The following is a preliminary analysis of liquefaction potential throughout the project site.

The majority of the project site is underlain by competent bedrock material; therefore, the potential for liquefaction in these areas is considered to be negligible. As discussed previously, liquefaction-prone areas within the project area include the San Dieguito River drainage, various tributary drainages, and the broad floodplain located in the southeastern portion of the project area (Figure 4.9-6). The San Dieguito River and immediately

adjacent areas are proposed for open space; therefore, liquefaction impacts to project components in this area would be minimal, except for the proposed location of the bridge to the clubhouse site west of the San Dieguito River (discussed below). Detailed design specifications are not yet available for this structure; however, any portion of the bridge foundation (e.g., bridge piers) located within the San Dieguito River may be highly susceptible to liquefaction.

Other liquefaction-prone areas coincide with areas proposed for development. Areas proposed for residential and commercial (resort) development in the western portion of the project site (i.e., the Balcor and Seaton subdivisions) are underlain by unconsolidated alluvium within existing tributary drainages. In addition, proposed residential areas in the southern portion of the site (i.e., McCrink subdivision) are also underlain by unconsolidated alluvium within tributary drainages. The broad floodplain located in the southeastern portion of the project area within the Bernardo Lakes subdivision is also a liquefaction-prone area proposed for residential development. As discussed below, various mitigation measures can be employed to reduce liquefaction impacts associated with the proposed project.

Landslides and Rockfalls

Impacts caused by landslides and rockfalls may include damage to structures, utilities, people, and infrastructure (e.g., roads, utility lines, etc.). Residential development is proposed in several areas as possible or suspected landslides in the western, central and southern portions of the project site within the Balcor and Seaton subdivisions (Figure 4.9-6) (Ninyo & Moore 1992). In addition, residential development in these areas would also involve grading activities within the Del Mar Formation, a geologic unit identified as prone to slope instability along cut slopes (Ninyo & Moore 1992). Although landslide impacts are considered significant for the proposed project, implementation of various mitigation measures (discussed below) would reduce such impacts to a level below significance.

Rockfall-prone areas occur in the northern portion of the project site (Figure 4.9-6) adjacent to the San Dieguito River; however, none of the identified rockfall-prone areas are proposed for residential or commercial development. Proposed land use in rockfall-prone areas is Category I Open Space (Sensitive Resources Protection Area). No structures or

facilities associated with the proposed project would be located in these areas: therefore, rockfall impacts are minimal for the proposed project and are not considered significant.

Soils

Soils within the study area that exhibit moderate to high erosion potential or moderate to high shrink/swell potential may cause significant impacts to various project components, including underground utilities, pipelines and foundations, and infrastructure. In addition, unconsolidated alluvium may be susceptible to settlement when subjected to vertical loads from placement of engineered fill or structures.

All of the areas proposed for residential and commercial development contain some natural soils exhibiting either a moderate to severe erosion potential and/or a moderate to high shrink-swell potential. In addition, proposed construction activities such as grading, vegetation removal, and the construction of cut and fill slopes would increase erosion potential throughout the study area, especially in steeper areas. Potential impacts associated with increased erosion include structural damage to cut and fill slopes by undermining, rilling, etc., exposure and damage to underground utilities, siltation of downstream drainage facilities, and reduction of water quality. Siltation and water quality impacts are discussed in detail in Section 4.8, Hydrology/Water Quality.

Settlement-prone areas underlain by unconsolidated alluvium are the same as liquefaction-prone areas and include the San Dieguito River drainage, various tributary drainages, and the broad floodplain located in the southeastern portion of the project area (Figure 4.9-6). The San Dieguito River and immediately adjacent areas are proposed for open space; therefore, settlement impacts in this area would be minimal, except for the proposed location of the bridge to the clubhouse site west of the San Dieguito River. Detailed design specifications are not yet available for this structure; however, any portion of the bridge foundation (e.g., bridge piers) located within alluvium of the San Dieguito River may be susceptible to settlement.

Other settlement-prone areas coincide with areas proposed for development. Areas proposed for residential and commercial (resort) development in the western portion of the project site (i.e., the Balcor and Seaton subdivisions) are underlain by unconsolidated alluvium within existing tributary drainages. In addition, proposed residential areas in the southern portion of the site (i.e., McCrink subdivision) are also underlain by

unconsolidated alluvium within tributary drainages. The broad floodplain located in the southeastern portion of the project area within the Bernardo Lakes subdivision is also a potential settlement-prone area proposed for residential development. As discussed below, various mitigation measures can be employed to reduce settlement impacts associated with the proposed project.

Mineral Resources

Areas underlain by geologic materials classified as significant mineral resources must be accessible for mining and recovery of those resources. Impacts to the available mineral resource base would be significant if the development of a proposed project rendered significant mineral resources inaccessible to mining and recovery.

No portions of the project study area have been classified as MRZ-2 (i.e., areas of significant aggregate deposits); however, the bedrock materials are considered an indirect source of aggregate. These materials are less desirable than aggregate resources in other portions of San Diego County that are more accessible and economically feasible to mine. Development of the proposed project would not result in a measurable decline in the existing aggregate resources base of San Diego County.

Three previously mined deposits of pyrophyllite have been identified within the study area (Weber 1963; Ninyo & Moore 1992). The locations of these deposits are shown in Figure 4.9-6. The easternmost deposit, referred to as the Four-Gee (Golem) deposit is located in the eastern portion of the project site (Weber (1963). This area is classified as Open Space Category I (Sensitive Resources Protection Area). Proposed land use in this portion of the project site would not allow any activities other than preservation; therefore, mining of this deposit would be precluded as a result of the proposed project. The two other deposits within the study area, referred to as the Harris and Pioneer deposits, are located in an area classified as Category Two Open Space (passive and active recreational uses). These areas are located in the western portion of the project site. The proposed land use designation in this area is incompatible with mining activities because non-recreational land uses such as mining would be prohibited; therefore, these areas would also be rendered unavailable for mining as a result of the proposed project.

A review of the geologic literature (Weber 1963) and a discussion with personnel at the CDMG indicate that the pyrophyllite deposits described above are generally of inferior

quality because of mineral impurities. Higher quality deposits mined elsewhere in California can adequately accommodate anticipated future demands. These deposits are therefore not considered a significant mineral resource. As a result. impacts to mineral resources resulting from the proposed project would not be significant.

4.9.3 Level of Significance

The level of significance for each impact evaluated above for the proposed project is described below.

- Impacts caused by ground acceleration and subsequent ground shaking would not be significant if the proposed project is designed utilizing the seismic parameters discussed above, guidelines of the UBC and the San Diego County Grading Ordinance, current seismic design specifications of the Structural Engineering Association of California (SEAOC), and the recommendations of site-specific geotechnical investigations.

- Impacts on project components proposed for construction in areas underlain by potentially liquefiable alluvium would be significant.

- Impacts caused by landslides are significant; impacts from rockfalls are not significant.

- Impacts to project components as a result of expansive, erodible, and settlement-prone soils are significant.

- Impacts on mineral resources are not significant.

With the implementation of mitigation measures in Section 4.9.4, all impacts to geology/ seismicity/soils will be mitigated.

4.9.4 Mitigation Measures

It is anticipated that all potentially significant impacts related to geology, seismicity, and soils could be reduced through the implementation of the mitigation measures described below and by implementing the recommendations of Ninyo & Moore (1992) and additional

site-specific geotechnical investigations. The design for the proposed project would, by law, incorporate a number of measures to minimize geologic, seismic, and soils impacts and to ensure the project is implemented in accordance with standard grading and construction practices. Such practices include adherence to guidelines from the UBC Chapter 70, the San Diego County Grading Ordinance (Sections 87.401-87.417), and the use of appropriate structural fill and foundation design pursuant to direction by a qualified geotechnical consultant.

Reconnaissance-level soil and geologic reports have been prepared for the McCrink Ranch subdivision, the Bernardo Lakes subdivision, and for an earlier version of the Balcor subdivision; however, comprehensive, development-specific geotechnical evaluations are required for each subdivision to facilitate the preparation and review of final project plans prior to approval of individual maps within the project site.

The purpose of the geotechnical evaluations shall be to provide site-specific data on potential geologic and geotechnical hazards and constraints, and information pertaining to the engineering characteristics of earth materials. The scope of these evaluations shall include a detailed description of the proposed grading plan and construction activities, subsurface investigations, laboratory testing of earth materials, and a summary of findings/conclusions and recommendations regarding subsurface conditions. These evaluations shall also include recommendations regarding grading/earthwork, stability of cut and fill slopes, subsurface drainage, foundations, retaining walls, roadway structural sections, and other pertinent geotechnical design considerations.

Recommendations provided by the geotechnical consultant shall be reviewed and approved by the County prior to incorporation into the final grading and construction plans. Grading and construction plans shall be reviewed by the County for conformance to the recommendations in the geotechnical evaluations and to ensure that the recommendations are properly incorporated into the project plans. A qualified geotechnical consultant shall be retained during grading operations to ensure that the recommendations developed during the geotechnical evaluation are implemented and to address unanticipated geotechnical issues arising during grading.

Mitigation Measures for Ground Acceleration/Ground Shaking Impacts

No mitigation measures are necessary provided the project is designed and constructed utilizing the seismic parameters discussed above, guidelines of the UBC and the San Diego County Grading Ordinance, current seismic design specifications of the SEAOC, and the recommendations of site-specific geotechnical investigations.

Mitigation Measures for Liquefaction Impacts

To reduce impacts, the following mitigation measures are recommended:

- Liquefaction-prone areas shall be identified as part of a site-specific geotechnical evaluation of each of the proposed subdivisions. The investigation shall be performed by a qualified geotechnical consultant and shall specifically address foundation stability in liquefaction-prone areas (i.e., areas underlain by loose, saturated alluvium) proposed for construction.

- For thinner deposits, loose, unconsolidated soils shall be removed and replaced with properly compacted fill soils, or other appropriate design stabilization measures shall be applied where feasible.

- For thicker deposits, applicable *in situ* densification techniques shall be implemented, such as vibroflotation, dynamic compaction, or densification with a heavy vibratory roller.

Mitigation Measures for Rockfall Impacts

No mitigation measures are necessary.

Mitigation Measures for Landslide Impacts

To reduce impacts, the following mitigation measures are recommended:

- Additional site-specific studies shall be performed to further identify and delineate features observed to be possible landslide masses. The

recommendations of these studies shall be incorporated into the final design for the proposed project.

- Subsequent to further evaluation of the "possible" landslide masses as part of the additional site-specific geotechnical evaluations, the slidemass shall be removed or a buttress shall be constructed to stabilize the slidemass.

- The stability of natural and cut slopes shall be evaluated by a qualified professional prior to construction. Cut and fill slopes shall be constructed according to guidelines set forth in the Uniform Building Code (Chapter 70) and local grading ordinances.

Mitigation Measures for Soils Impacts

- Areas of problem soils shall be identified as part of a site-specific geotechnical evaluation of each of the proposed subdivisions. The investigation shall be performed by a qualified geotechnical consultant and shall specifically address foundation stability in problem soil areas proposed for construction. Recommendations made in the geotechnical investigation shall be incorporated into the final project design.

To reduce impacts from expansive soils, the following mitigation measures are recommended:

- Expansive soils shall be replaced with granular non-expansive soils, or treated with lime to reduce expansivity. Alternatively, other appropriate measures shall be utilized to reduce soil expansivity.

- Project components shall be designed to resist damage impacts from expansive soils as the need arises.

To reduce impacts from soil erodability, a number of construction and permanent mitigation measures are recommended. Construction measures shall be employed during buildout of the proposed project. These include the following:

- Soil stockpiles and exposed (graded) slopes shall be covered with plastic sheeting where feasible during inclement weather conditions.

- Drainage control devices shall be constructed to direct surface water runoff away from slopes and other graded areas: hay bale barriers or sandbags shall be placed along the toes of graded slopes to help control and reduce sedimentation during grading operations.

- Temporary sedimentation/desilting basins shall be constructed where necessary between graded areas and natural runoff courses to minimize downstream sediment influx during grading.

- Disturbed slopes shall be immediately seeded with groundcover vegetation.

- The angle of constructed slopes shall be minimized to reduce disturbance to existing vegetation and slopes.

- A silt curtain shall be placed around construction areas to protect natural drainage channels from sedimentation.

- Construction and grading during periods of inclement weather shall be avoided.

- A light spray of water shall be applied to graded areas and temporary (haul) roads during construction to control fugitive dust.

To reduce impacts from soil erodability, a number of permanent measures are also be recommended:

- Irrigation requirements on graded slopes and golf course areas shall be reduced through means such the use of low-pressure sprinkling systems. Irrigation operations shall be conducted to minimize runoff and evaporation losses.

- A drainage control plan shall be prepared by a qualified geotechnical or hydrological consultant. Recommendations on the type, design, and location of temporary and permanent drainage facilities shall be incorporated into the final project design.

- Energy dissipating structures such as rip rap strips and detention ponds shall be constructed downstream of all culverts, storm drain outlets, and subdrain outlets.

- Runoff diversion structures such as inlet pipes and brow ditches shall be constructed where appropriate to minimize runoff flow down graded slopes.

Mitigation Measures for Mineral Resource Impacts

No mitigation measures are necessary.

4.9.5 Tentative Map Area Impacts

Balcor Subdivision Map Impacts

Ground Shaking, Rockfalls, Mineral Resources, Liquefaction, Landslides, Soils

Criteria for Significance Determination

Ground shaking, fault rupture, rockfalls, mineral resources, liquefaction, landslides, and soils impacts associated with the proposed Balcor subdivision are evaluated according to the same significance criteria listed for the SPA (see Section 4.9.2).

Impact Analysis

Ground shaking, rockfall, and mineral resources impacts associated with the proposed Balcor subdivision have been discussed under impacts to the SPA (see Section 4.9.2).

Liquefaction. Liquefaction-prone areas within the Balcor subdivision include tributary drainages in proposed residential development areas located in the eastern and southern portions of the property. In addition, the proposed location of the bridge to the clubhouse site west of the San Dieguito River may be subject to liquefaction, because bridge piers are proposed within the floodway of the San Dieguito River, which contains loose, saturated alluvium. Detailed design specifications are not yet available for this structure; however,

proper design and construction of the bridge piers would mitigate significant impacts from liquefaction.

Landslides. As shown on the geotechnical constraints map (Figure 4.9-6), a suspected landslide occurs within the Balcor subdivision in the eastern portion of the property adjacent to a tributary drainage, in a proposed residential development area. Another small suspected landslide occurs in the central portion of the property in an open space area proposed for golf course use. As shown in Figure 4.9-6, lithologically weak rock units (e.g., the Delmar Formation) exposed throughout the property in proposed residential areas are prone to landsliding. Landslide impacts to the Balcor subdivision are therefore expected.

Soils. Soil-related impacts resulting from development of the Balcor subdivision would be generally the same as impacts associated with the SPA (see Section 4.9.2). Within the Balcor subdivision, topsoil developed on the Torrey Sandstone and the Delmar Formation is composed of highly expansive silty clays up to 3 feet thick (Geocon 1985) in areas proposed for residential development. In addition, weathering and decomposition of near-surface exposures of metavolcanic rock and sedimentary rock throughout the Balcor property in proposed residential and commercial (i.e., clubhouse) areas result in highly expansive clayey topsoil (Table 4.9-1, Figure 4.9-6).

Suspected landslide deposits located in the eastern and central portions of the property in proposed residential areas may be susceptible to settlement when subjected to an increase in vertical loads as would result from the placement of fill or structures. Loose, unconsolidated alluvium underlying tributary drainages within the Balcor subdivision in proposed residential areas would also be susceptible to settlement under applied loads.

The proposed bridge to the clubhouse site west of the San Dieguito River may be subject to settlement if foundation structures (e.g., bridge piers) are located within unconsolidated alluvium associated with the San Dieguito River; however, proper design and construction of the bridge piers would effectively mitigate this impact.

Level of Significance

The level of significance for each impact evaluated above for the proposed Balcor subdivision is described below.

- Impacts caused by ground acceleration and subsequent ground shaking would not be significant if the proposed development is designed utilizing the seismic parameters discussed above, guidelines of the UBC and the San Diego County Grading Ordinance, current seismic design specifications of the SEAOC, and the recommendations of site-specific geotechnical investigations.

- Impacts on project components proposed for construction in areas underlain by potentially liquefiable alluvium would be significant.

- Impacts on mineral resources would not be significant.

- Impacts caused by landslides would be significant: impacts from rockfalls would not be significant.

- Soils impacts associated with the proposed development would be significant.

Mitigation

Mitigation measures for significant impacts associated with the proposed Balcor subdivision are the same as those identified for the SPA (see Section 4.9.2). Implementation of applicable mitigation measures listed in Section 4.9.2 would reduce all significant impacts associated with the proposed Balcor subdivision.

Seaton Subdivision Tentative Map Impacts

Ground Shaking, Rockfalls, Mineral Resources, Liquefaction, Landslides, Soils

Criteria for Significance Determination

Ground shaking, rockfalls, mineral resources, liquefaction, landslides, and soils impacts associated with the proposed Seaton subdivision are evaluated according to the same significance criteria listed for the SPA (see Section 4.9.2).

Impact Analysis

Ground shaking, rockfall, and mineral resource impacts associated with the proposed Seaton subdivision have been discussed under impacts to the SPA (see Section 4.9.2). As discussed previously, rockfall and mineral resource impacts to the SPA are not significant. These impacts remain insignificant for the proposed Seaton subdivision as well.

Liquefaction. As shown in Figure 4.9-6, no areas of extensive unconsolidated alluvium are known to occur within the Seaton property; therefore, liquefaction impacts are not expected to occur. A limited area of unconsolidated alluvium occurs in the northeastern corner of the property; however, this area is probably not extensive enough to be of concern.

Landslides. A suspected landslide occurs within a proposed residential development area in the northeastern corner of the Seaton subdivision. In addition, landslide-prone geologic units occur in the eastern portion of the property (Figure 4.9-6).

Soils Impacts. Soil-related impacts associated with the proposed Seaton subdivision have generally been discussed under impacts to the SPA (see Section 4.9.2). Soil settlement impacts related to the presence of unconsolidated alluvium would be minimal because most of the development is underlain by shallow or exposed bedrock. Settlement impacts could occur from the presence of a suspected landslide in the northeastern corner of the property. Landslide deposits are typically poorly consolidated and may be subject to settlement under applied loads. Expansive soils underlain by shallow, metavolcanic bedrock are exposed throughout the proposed development.

Level of Significance

The level of significance for each impact evaluated above for the proposed Seaton subdivision is described below.

- Impacts caused by ground acceleration and subsequent ground shaking would not be significant if the proposed project is designed utilizing the seismic parameters discussed above, guidelines of the UBC and the San Diego County Grading Ordinance, current seismic design specifications of the SEAOC, and the recommendations of site-specific geotechnical investigations.

- Impacts on mineral resources would not be significant.
- Impacts caused by liquefaction would not be significant.
- Impacts caused by landslides would be significant; impacts from rockfalls would not be significant.
- Soils impacts associated with the proposed development would be significant.

Mitigation

Mitigation measures for significant impacts associated with the proposed Seaton subdivision are the same as those identified for the SPA (see Section 4.9.2). Implementation of applicable mitigation measures listed in Section 4.9.2 would reduce all significant impacts associated with the proposed Seaton subdivision.

McCrink Ranch Subdivision Tentative Map Impacts

Ground Shaking, Rockfalls, Mineral Resources, Liquefaction, Landslides, Soils

Criteria for Significance Determination

Ground shaking, rockfalls, mineral resources, liquefaction, landslides, and soils impacts associated with the proposed McCrink subdivision are evaluated according to the same significance criteria listed for the SPA (see Section 4.9.2).

Impact Analysis

Ground shaking, fault rupture, rockfall, and mineral resources impacts associated with the proposed McCrink subdivision have been discussed under impacts to the SPA (see Section 4.9.2). As discussed previously, rockfall and mineral resource impacts to the SPA are not significant. These impacts remain insignificant for the proposed McCrink subdivision as well.

Liquefaction. Unconsolidated, possibly saturated alluvium occurs in the northern portion of the McCrink property; however, no residential or commercial land use is planned in this area. Liquefaction impacts in this area would therefore not be significant. Potentially liquefiable alluvium occurs in proposed residential areas in the southern portion of the property in existing tributary drainages.

Landslides. As shown in Figure 4.9-6, the southern portion of the McCrink Ranch property contains suspected landslides and landslide-prone geologic units. This portion of the property is proposed for residential development; therefore, landslide impacts discussed in Section 4.9.2 would also be expected for the proposed subdivision.

Soils. Soil-related impacts to the McCrink subdivision would generally be the same as impacts to the SPA (see Section 4.9.2). Suspected landslides and unconsolidated alluvium within proposed residential areas in the southern portion of the property may be subject to settlement under applied loads. Exposures of the Torry Sandstone in the central and southern portions of the proposed McCrink subdivision typically lack adequate cohesion, which renders this formation susceptible to rapid erosion (Geocon 1985, 1989).

Level of Significance

The level of significance for each impact evaluated above for the proposed McCrink subdivision is described below.

- Impacts caused by ground acceleration and subsequent ground shaking would not be significant if the proposed project is designed utilizing the seismic parameters discussed above, guidelines of the UBC and the San Diego County Grading Ordinance, current seismic design specifications of the SEAOC, and the recommendations of site-specific geotechnical investigations.

- Impacts on mineral resources would not be significant.

- Impacts from liquefaction would be significant.

- Impacts from landslides would be significant: impacts due to rockfalls would not be significant.

- Soil impacts associated with the proposed development would be significant.

With the implementation of mitigation measures in Section 4.9.4 and specific mitigation measures for McCrink Ranch tentative map impacts, all impacts to geology/seismicity/soils will be mitigated.

Mitigation

Mitigation measures for significant impacts associated with the proposed McCrink subdivision are the same as those identified for the SPA (see Section 4.9.2). In addition, the final grading plans for the project shall incorporate all of the recommendations of the soil and geologic reconnaissance investigation completed for the McCrink property by Geocon (1989). Implementation of this mitigation measure, along with those listed in Section 4.9.2 would reduce all significant impacts associated with the proposed McCrink subdivision to below a level of significance. Implementation of applicable mitigation measures listed in Section 4.9.2 would reduce all significant impacts associated with the proposed McCrink subdivision.

Bernardo Lakes Subdivision Tentative Map Impacts

Ground Shaking, Rockfalls, Mineral Resources, Liquefaction, Landslides, Soils

Criteria for Significance Determination

Ground shaking, rockfalls, mineral resources, liquefaction, landslides, and soil impacts associated with the proposed Bernardo Lakes subdivision are evaluated according to the same significance criteria listed for the SPA (see Section 4.9.2).

Impact Analysis

Ground shaking, rockfall, and mineral resource impacts associated with the proposed Bernardo Lakes subdivision have been discussed under impacts to the SPA (see

Section 4.9.2). As discussed previously, rockfall and mineral resource impacts associated with development of the SPA are not significant. These impacts remain insignificant for the proposed Bernardo Lakes subdivision as well.

Liquefaction. Impacts to the Bernardo Lakes subdivision would be generally the same as impacts to the SPA (see Section 4.9.2). Saturated alluvium may be present in the area of the broad floodplain located in the eastern portion of the Bernardo Lakes subdivision in an area proposed for residential development. Liquefaction potential in this area is considered to be moderate to high.

Landslides. Landslide impacts to the Bernardo Lakes subdivision would be generally the same as impacts to the SPA (see Section 4.9.2). Although no existing landslides have been identified, relatively weak sedimentary rocks of the Delmar Formation in the northeastern and southwestern portions of the property may be susceptible to landsliding along steep slopes where lithologically weak bedding planes are adversely oriented (i.e., dipping out of slope).

Soils. Soil-related mpacts to the proposed Bernardo Lakes subdivision would generally be the same as impacts to the SPA (see Section 4.9.2). Unconsolidated, potentially settlement-prone alluvium occurs in the area of the broad floodplain located in the eastern portion of the Bernardo Lakes subdivision in an area proposed for residential development.

Level of Significance

The level of significance for each impact evaluated above for the proposed Bernardo Lakes subdivision is described below.

- Impacts caused by ground acceleration and subsequent ground shaking would not be significant if the proposed project is designed utilizing the seismic parameters discussed above, guidelines of the UBC and the San Diego County Grading Ordinance, current seismic design specifications of SEAOC, and the recommendations of site-specific geotechnical investigations.

- According to previous consulting reports and the geologic literature, no faults or fault-related features are known to directly underlie the property; therefore, ground rupture would not be a significant impact to the proposed project.

- Impacts on mineral resources would not be significant.

- Impacts caused by liquefaction would be significant.

- Impacts caused by landslides would be significant; impacts from rockfalls would not be significant.

- Soils impacts associated with development of the proposed subdivision would be significant.

With the implementation of mitigation measures in Section 4.9.4 and specific mitigation measures for Bernardo Lakes tentative map impacts, all impacts to geology/seismicity/soils will be mitigated.

Mitigation

Mitigation measures for significant impacts associated with the proposed Bernardo Lakes subdivision are the same as those identified for the SPA (see Section 4.9.2). In addition, the final grading plans for the project shall incorporate all of the recommendations of the soil and geologic reconnaissance investigation completed for the Bernardo Lakes property by Geocon (1995c). Implementation of this mitigation measure, along with those listed in Section 4.9.2 would reduce all significant impacts associated with the proposed Bernardo Lakes subdivision.

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4.10 PALEONTOLOGICAL RESOURCES

4.10.1 Existing Conditions

The paleontological resources (i.e. fossils) of an area consist of all the remains and/or traces of prehistoric plant and animal life exclusive of man within the geologic formations in that area. For the purpose of this discussion, the term fossil will refer to remains such as bones, teeth, shells, leaves, etc. which are found in the geologic formations in which they were originally buried, and the paleontological resources will include not only the actual fossil remains but also the collecting localities, and the geologic formations containing those localities. Paleontological resources thus represent limited, nonrenewable, and sensitive scientific and educational resources. Such resources are protected by CEQA regulations.

The California Environmental Quality Act Appendix G gives the following description of significant effects: "A project will normally have a significant effect on the environment if it will disrupt or adversely affect a paleontological site except as part of a scientific study."

Paleontological Setting

A direct relationship exists between a geologic formation and the fossils that occur within it. By knowing the geology of an area, one can with reasonable certainty predict whether fossils occur at a site. Thus, an overview of the geologic setting of the Santa Fe Valley area provides a foundation for evaluating the paleontological resources within the study area.

The Santa Fe Valley SPA is situated in the Peninsular Ranges Province of California (Figure 4.9-3). This province generally consists of rugged mountains underlain by Pre-Cretaceous metasedimentary and metavolcanic rocks and Cretaceous plutonic rocks of the Southern California Batholith. Tertiary and Quaternary sediments flank the mountain ranges. Tertiary and Quaternary rocks are generally comprised of non-marine sediments consisting of sandstones, mudstones, conglomerates, and occasional volcanic units.

Determination of the paleontological resource potential of the Santa Fe Valley area was based upon a review of published geologic reports (Kennedy 1975a,b) and a geologic field survey of the Santa Fe Valley property (Ninyo and Moore 1992).

Levels of Sensitivity

In order to characterize the Santa Fe Valley SPA's paleontologic resources, the site was divided into sensitivity levels based on the type of paleontologic resources that may be found in the geologic formations that make up the site. The following levels of sensitivity are based upon criteria developed by Engineering-Science in their Paleontologic Resource Assessment Overview (1988). These levels are rated for individual formations, since it is the formation that contains the fossil remains (refer to Figure 4.9-1 for locations of individual geologic formations).

High Sensitivity. Formations with a large number of known fossil localities either within or outside the study area. Generally, highly sensitive formations primarily produce vertebrate fossil remains or are considered to have the potential to produce such remains.

Moderate Sensitivity. Formations with a moderate number of known fossil localities from either within or outside the study area. Generally, moderately sensitive formations primarily produce invertebrate fossil remains in high abundance or vertebrate fossils remains in low abundance.

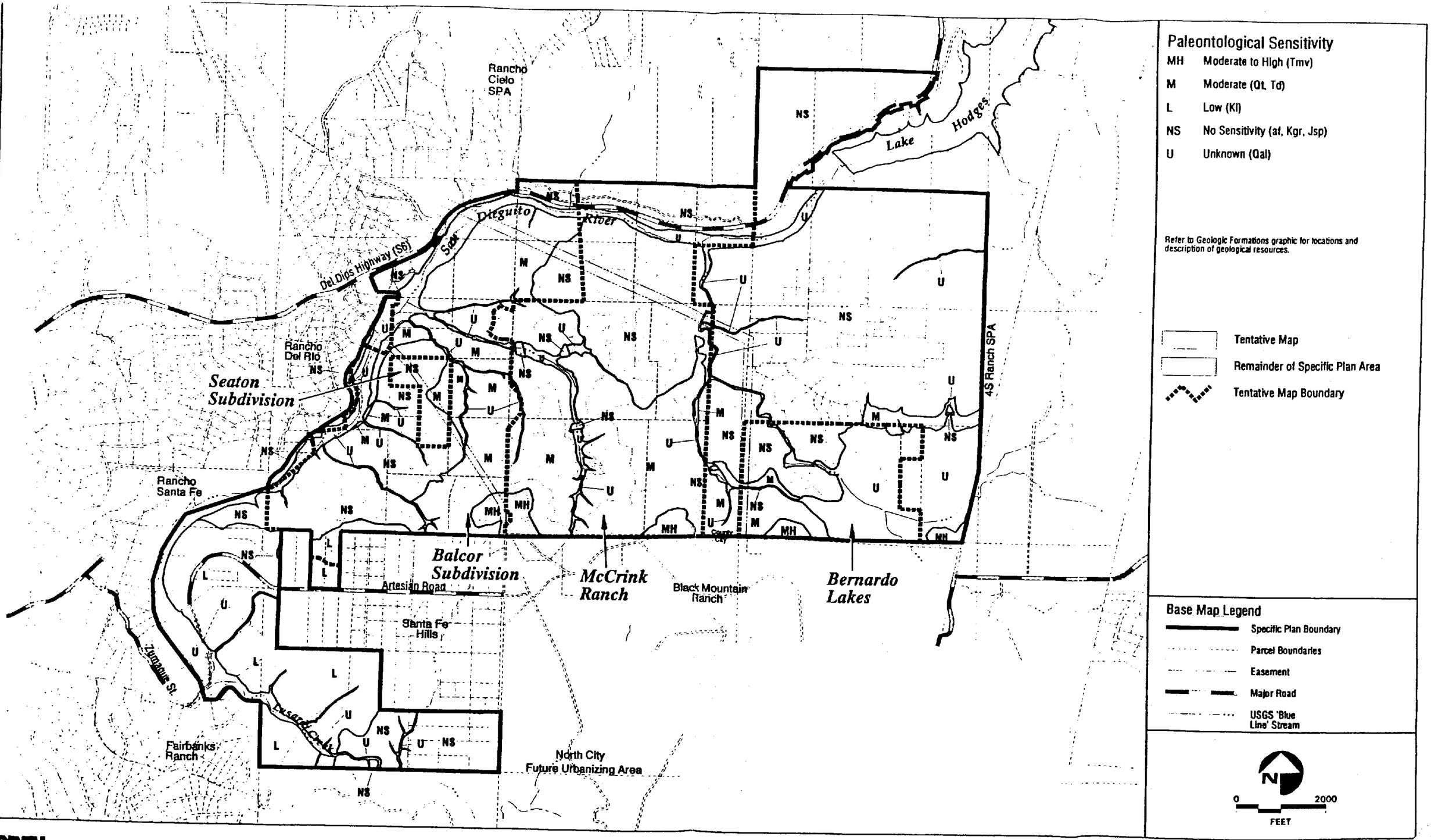
Low Sensitivity. Formations with only a small number of known fossil localities from either within or outside the study area. Typically, low sensitivity formations produce invertebrate fossil remains in low abundance.

Unknown Sensitivity. Formations in which there are presently no known paleontological resources, but which have the potential for producing such remains based on their sedimentary origin.

No Importance (Zero Sensitivity). Formations which are igneous in origin (i.e., volcanic or plutonic) and, therefore, have no potential for ever producing fossil remains.

Paleontology of Individual Formations

The following is a brief description of each of the geologic formations, their distribution, and resource sensitivity, within the Santa Fe Valley SPA. Figure 4.10-1 depicts the levels of sensitivity for the Santa Fe Valley SPA.



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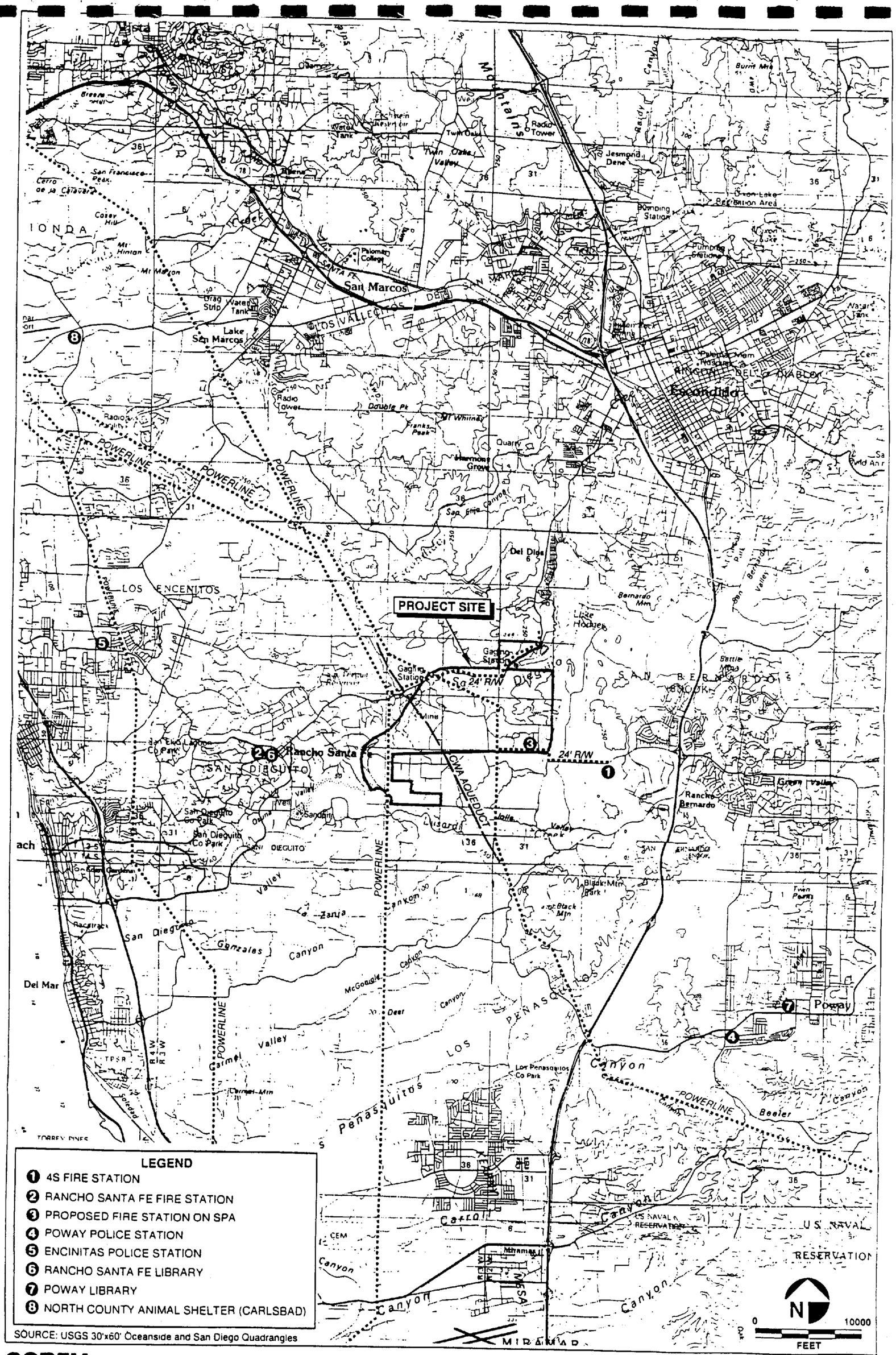
Paleontological Sensitivity for Santa Fe Valley SPA

FIGUR

4.1



LEGEND

1. 4S FIRE STATION
2. RANCHO SANTA FE FIRE STATION
3. PROPOSED FIRE STATION ON SPA
4. POWAY POLICE STATION
5. ENCINITAS POLICE STATION
6. RANCHO SANTA FE LIBRARY
7. POWAY LIBRARY
8. NORTH COUNTY ANIMAL SHELTER (CARLSBAD)

SOURCE: USGS 30'x60' Oceanside and San Diego Quadrangles

OGDEN

Public Services and Utilities Locations

FIGURE **4.13-1**

4.13.3

Fill

Introduction. Scattered, small, and localized portions of the Santa Fe Valley project site were observed to be underlain by artificial fill soils.

Paleontology

Distribution. Fossils are typically not found within fill soils as these soils have been altered and disturbed.

Resource Sensitivity. Fill soils possess no resource sensitivity.

Quaternary Alluvium (Qal)

Introduction. Poorly consolidated stream deposited sediments of relatively recent age located on the bottom and lower flanks of the drainages in the project vicinity.

Paleontology. No fossils from the Quaternary alluvial deposits were observed. None are likely to be found given their relative youthfulness.

Distribution. Deposits are located primarily within the San Dieguito River, Lusardi Creek, and their tributary drainages.

Resource Sensitivity. The alluvial deposits in the project area possess an unknown paleontological resource sensitivity which indicates that fossil discoveries in alluvium are rare. However, alluvial deposits have the potential for producing paleontological resources based on their sedimentary origin.

River Terrace Deposits (Qt)

Introduction. The river terrace deposits were observed as laterally discontinuous beds of silt, clay, and sand of probable Quaternary-age and of terrestrial origin. These deposits are interpreted to have been deposited by ancient rivers and their associated tributaries.

Paleontology. Important vertebrate remains have been found in sites within the San Diego region underlain by River Terrace Deposits. The presence of fossil remains at other locations underlain by this formation indicates that potentially significant sites may be encountered elsewhere.

Distribution. The deposits are present in the northwestern portion of the Santa Fe Valley property, south and east of the San Dieguito River basin.

Resource Sensitivity. These deposits are considered to have a moderate paleontological resource sensitivity.

Mission Valley Formation (Tmv)

Introduction. This formation, in the Mission Valley area (Kennedy & Moore 1971), is a gray, fine-grained, marine sandstone of middle Eocene age (approximately 45 million years old (myo)).

Paleontology. Exposures of the Mission Valley Formation in the San Diego area have produced well preserved marine invertebrate fossils (clams, snails, crabs, sharks and boney fishes: Kern 1978).

Distribution. The Mission Valley Formation is sporadically located along the southern boundary line of the Santa Fe Valley SPA, at the County of San Diego/City of San Diego jurisdictional line.

Resource Sensitivity. This formation has the potential for yielding remains of important Eocene land mammals and is considered to have a moderate to high resource sensitivity.

Delmar Formation (Td)

Introduction. The Delmar Formation is considered to be middle Eocene in age and predominantly consists of a dusky yellowish-green sandy claystone interbedded with medium-gray course-grained sandstone.

Paleontology. Important vertebrate remains have been found in sites within the San Diego region underlain by the Delmar Formation. The presence of fossil remains at other locations underlain by this formation indicates that potentially significant sites may be encountered elsewhere.

Distribution. This Formation is centrally located within the project site.

Resource Sensitivity. The Delmar Formation is considered to have a moderate paleontological resource sensitivity.

Lusardi Formation (Kl)

Introduction. The Lusardi Formation was named by Nordstrom (1970) for exposures of boulder conglomerate near the confluence of Lusardi Creek and the San Dieguito River. These rocks consist of cobble and boulder conglomerate, with occasional thin lenses of medium-grained sandstone. The Lusardi Formation is considered to be late Cretaceous in age.

Paleontology. No fossils from this rock unit have been found in San Diego.

Distribution. The Lusardi Formation can be found in the southwestern most portion of the Santa Fe Valley property.

Resource Sensitivity. The Lusardi Formation is considered to have a low resource sensitivity.

Granitic Rock (Kgr)

Introduction. Granitic rock material was observed during the site reconnaissance, consisting of gray-green, dense to very dense, fine to coarse ground bedrock.

Paleontology. No fossils from this rock unit have been found in San Diego.

Distribution. Two small locations of granitic rock are present in the north-central and northernmost portions of the project site.

Resource Sensitivity. Granitic rock is considered to have no resource sensitivity.

Santiago Peak Volcanics (Jsp)

Introduction. The name "Santiago Peak Volcanics" has been applied in the San Diego area (Kennedy 1975a,b) to a complex sequence of slightly metamorphosed volcanic and marine sedimentary rocks of presumed late Jurassic age approximately 140 million years before present (myBP). Recent radiometric analysis of these rocks by researchers at San Diego State University suggests an early Cretaceous age approximately 128 myBP.

Paleontology. Because of the "fiery" origin of volcanic rocks, no fossils are expected to be found in the metavolcanic portion of the Santiago Peak Volcanics. However, exposures of the metasediments (in Los Peñasquitos Canyon and La Zanja Canyon in the vicinity of the Santa Fe Valley area), have produced rare fossil remains of several types of marine invertebrates including belemnites (extinct squid-like animals) and clams (Jones and Miller 1982).

Distribution. The Santa Fe Valley project site is largely made up of Santiago Peak Volcanics. This formation is distributed throughout the northern, eastern, and western portions of the project site, as well as within the southernmost tip of the property.

Resource Sensitivity. The metavolcanic portion of the Santiago Peak Volcanics is considered to have no paleontological resource sensitivity. The metasedimentary portion of the formation has a low resource sensitivity.

4.10.2 Specific Plan Area Impacts

Criteria for Significance Determination

A significant impact to paleontological resources could result if a substantial amount of earthwork activities are to occur within a geologic formation that contains a high to medium level of resource sensitivity.

Paleontological Sensitivity

The paleontological sensitivity of a geologic formation is directly related to the significance of the fossils it contains. Therefore, formations containing moderate and high significant paleontological resources are considered to be sensitive to adverse environmental impacts. Using the following guidelines (Grissold E. Petty, Acting Director of Bureau of Land Management 1978), a paleontologic resource is determined to be of significant, scientific, and educational value if it:

- provides important information on the evolutionary trends among organisms, relating living inhabitants of the earth to extinct organisms
- provides important information regarding development of biological communities or interaction between botanical and zoological biota
- demonstrates unusual or spectacular circumstances in the history of life
- is in short supply and in danger of being depleted or destroyed by the elements, vandalism, or commercial exploitation, and is not found in other geographic locations
- demonstrates that all vertebrate fossils have been categorized as being of significant scientific value

Impacts to paleontological resources can be rated from high to low directly related to the resource sensitivity of impacted formations. Impacts to these resources most often occur when earthwork activities such as mass excavation projects or pipeline trenching operations, cut into geological deposits (formations) where fossils are buried. These impacts are generally in the form of physical destruction of fossil remains. Other impacts might include burial of a fossiliferous locality by fill operations, casual fossil collecting by amateur collectors, or heavy landscaping of park areas.

Development proposed for Santa Fe Valley would involve considerable amounts of construction in some parts of the SPA. Such construction typically requires large-scale

excavation work which, if done in areas with highly sensitive or moderately sensitive paleontological resources, would result in significant impacts.

Paleontological resources with a moderate resource sensitivity have the potential to exist in the San Dieguito River basin and associated tributaries. These areas are planned to remain as open space under the Specific Plan, with the exception of equestrian and bicycle trails. The construction of the trails will involve a minimal amount of excavation and construction; therefore, no significant impacts to these formations would occur.

The potential for paleontological resources exists in the southern portion of the Santa Fe Valley SPA, at the County of San Diego/City of San Diego jurisdictional boundary line where the Mission Valley Formation (Tmv) is located. This Formation has a moderate to high resource sensitivity and therefore, significant impacts could result with the implementation of extensive construction.

The central portion of the project site is underlain by the Delmar Formation, which has a moderate resource sensitivity. This area is proposed for Open Space Category II, and low, medium, and high density residential development (refer to Section 4.1 for specific planned land use characteristics). Grading activities may potentially impact existing paleontological resources in this area.

4.10.3 Level of Significance

Because of sensitivity levels, development proposed in the southern and central portions of Santa Fe Valley SPA could result in potentially significant impacts to paleontological resources that may exist in the Mission Valley and the Delmar Formations. However, direct project impacts to these paleontological resources, if recovered during construction activities, are mitigable by providing an onsite monitoring and recovery program during grading. Additional measures described below will further mitigate impacts to paleontological resources.

With the implementation of mitigation measures in Section 4.10.4, all impacts to paleontological resources will be mitigated.

4.10.4 Mitigation Measures

Potentially significant impacts to paleontological resources can be mitigated by the measures outlined below. All mitigation work shall be done by a qualified professional paleontologist with a working knowledge of the Santa Fe Valley area.

- Prior to issuance of grading permits, the applicant shall retain a qualified paleontologist to carry out the mitigation measures described below. A qualified paleontologist is defined as an individual with a M.S. or Ph.D. in paleontology or geology who is familiar with paleontological procedures and techniques. The paleontologist shall attend pre-grade meetings to consult with grading and excavation contractors.

- A paleontological monitor shall be onsite during grading operations to evaluate the presence of fossils within previously undisturbed sediments of highly sensitive geologic formation and moderately sensitive formations to inspect cuts for contained fossils. In addition, the paleontologist shall be allowed to direct, divert, or halt grading to allow for determination of significance and recovery of fossils. The paleontological monitor shall work under the direction of a qualified paleontologist.

- Prepared fossils, along with copies of all pertinent field notes, photos, and maps, shall be deposited (with the applicant's permission) in a scientific institution with paleontological collections, such as the San Diego Natural History Museum. A final summary report shall be completed and distributed to the County and other interested agencies which outlines the results of the mitigation program. This report shall include discussions of the fossils.

4.10.5 Tentative Map Area Impacts and Mitigation Measures

Potential paleontological resource impacts and mitigation for the tentative map area would be the same as for the Specific Plan Area. Refer to Figure 4.10-1 for sensitivity categories for tentative map areas.

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4.11 POPULATION/DEMOGRAPHICS

CEQA Guidelines Section 15216 subd. (g) discusses growth-inducing impacts of proposed actions. According to Section 15126 subd. (g), population/growth-related analyses should focus on the ways in which the proposed project could foster population growth, or the construction of additional housing, either directly or indirectly. The analysis should include removal of obstacles to population growth, and increases in population that may further tax existing community services. Characteristics of projects that may encourage and facilitate other activities that could significantly affect the environment either individually or cumulatively should also be discussed. Section 15126 cautions that growth in an area must not be assumed to be necessarily beneficial, detrimental, or of little significance to the environment.

Evaluation in this section focuses on the proposed Santa Fe Valley Specific Plan's relationship to and affect on the region's population/demographics. Population is typically expressed in terms of the number of people residing within a given region. Effects on human population are evaluated in terms of potential in-migration to or out-migration from a project's region of influence (ROI) as a result of changes in labor demand, housing availability, or other relevant variables. Demographic evaluations include past and/or projected changes in population growth rate, density, distribution, or related statistics. The ROI for this population/demographic analysis is limited to the 1990 North San Diego Subregional Area Number 14 (SRA 14) boundaries, as defined by the San Diego Association of Governments (SANDAG) and the U.S. Census.

SANDAG, in cooperation with the 18 cities of the region and the County of San Diego, provides data on population and other socioeconomic resources for the entire San Diego area. SANDAG generates growth projections, known as Regional Growth Forecasts, which project the rate of population growth that is likely to occur in the region based on current and projected trends in fertility, mortality, migration, land use, and public policy. The SANDAG Series 8 (Series 8) Regional Growth Forecast, which is based on 1990 census data and covers from years 1990 to 2015, is the most recent growth projection data. However, Series 8 has not yet been adopted or endorsed by SANDAG's member agencies including the County of San Diego. Therefore, the analysis in this section is based on SANDAG's Series 7 (Series 7) Regional Growth Forecast, which is based on 1985 census data and covers from 1985 to 2010.

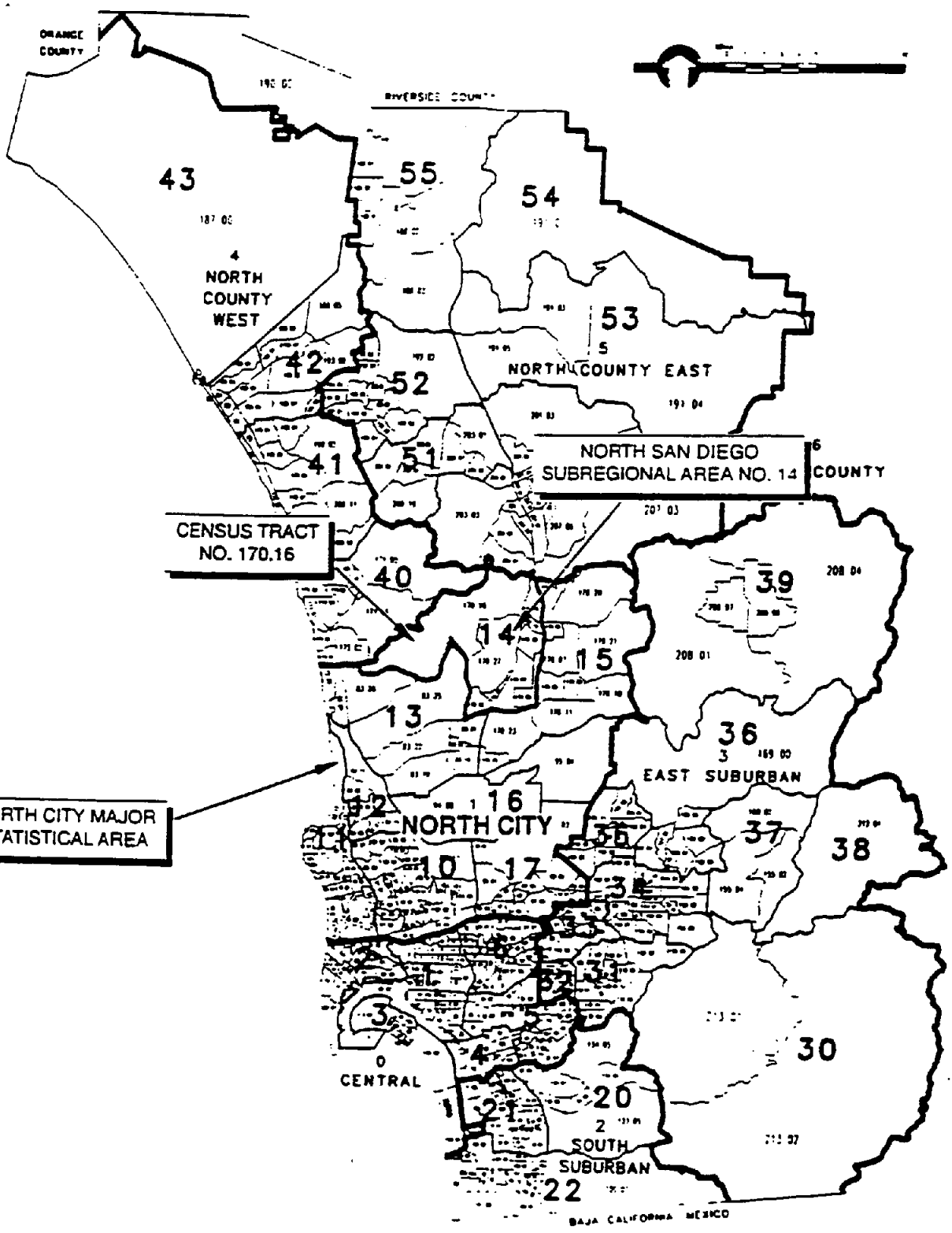
SANDAG's growth forecasts do not consider specific development proposals within the region (such as the proposed Santa Fe Valley Specific Plan and associated Tentative Maps), but make projections based on the build-out potential of existing land use designations as outlined in adopted planning documents. Regional growth forecasts are produced for the region as a whole and incorporate national demographic and economic trends. Land use policies, transportation corridors, and market trends are taken into account as they relate to geographic areas within the region.

For purposes of census data gathering, San Diego County has been divided into seven Major Statistical Areas (MSAs), each of which is subdivided into statistical data layers of successively decreasing geographic extent. For example, the proposed project site is located within 1990 Census Tract Number 170.16, which is a subunit of SRA 14. SRA 14 is part of the larger 1990 North City MSA (see Figure 4.11-1). In order to provide a comprehensive overview of the population/demographic characteristics in the San Diego region, this section includes a discussion derived from the MSA, SRA and census tract levels of data organization, with some background data presented for the entire county for the purpose of comparison. The impact analysis section evaluates potential effects within the ROI as defined above.

4.11.1 Existing Conditions

Since 1960, the population of San Diego County has grown dramatically; twice as fast as the rest of the state and three times faster than the nation as a whole. The 1990 Census revealed the growth rate in the region during the 1980's was among the highest in the nation, with an annual population increase of almost 65,000 people and a total population of 2.5 million residents at the end of the decade. This represents an increase of 34 percent over this 10-year period. Much of the growth that occurred during the 1980's can be attributed to the booming economy and the employment-related in-migration characteristic of this decade.

Population in the region is projected to grow for the foreseeable future, although at a slower rate than in the previous 25-year period. For the fourth consecutive year, through 1994, the population increase in the San Diego region is less than that of the previous year. The gain of 41,171 persons during the year 1993 is the smallest seen in San Diego since 1981. The annual population increases over that 14-year period average 59,000 which is



SOURCE: San Diego Association of Governments

OGDEN

Statistical Areas of San Diego County

FIGURE 4.11-1

43 percent higher than the 1993 figure. A principal reason for this is that the region had a net loss of 26,000 jobs between 1990 and 1993 (people tend to migrate to the location of potential employment) (SANDAG 1994). Migration data show the effect of these losses. During 1993, net domestic out-migration from the region (not including military personnel) was -7,700 persons (SANDAG 1994).

An annual growth rate of 1.5 percent is projected for the County as a whole, with growth rates ranging from 0.9 percent in the Central MSA to 4.7 percent in the East County MSA. The Central MSA, currently the most populous, is projected to increase at a growth rate of approximately 1 percent per year between 1995 and 2000. By the year 2015, however, the North City MSA (which includes the project site) is projected to surpass the Central MSA to become the most populated MSA in the county. According to Series 7, the North City MSA is projected to have a 1.7 percent annual growth rate through the year 2010.

Population trends in the North City MSA, North San Diego SRA, and Census Tract Number 170.16 are shown in Table 4.11-1.

Table 4.11-1

POPULATION TRENDS IN THE NORTH CITY MSA, NORTH SAN DIEGO SRA, AND CENSUS TRACT NO. 170.15

Statistical Area	1990 Population	Series 7 Population Projection for the year 2010	Average Annual Growth Route from 1985-2010
North City MSA	569,992	755,308	1.7%
North San Diego SRA	67,763	93,018	3.5%
Census Tract No. 170.15	11,370	15,610	3.1%

Source: SANDAG 1994

The Santa Fe Valley SPA is currently underdeveloped with the exception of approximately 20 residences existing onsite. Assuming 2.87 persons per household, the current population of the SPA is approximately 57 persons.

4.11.2 Specific Plan Area Impacts

This section contains an estimation of the population changes that may occur as a result of the proposed project and compares these estimates to those made by SANDAG for the local area as well as the subregion in its Series 7 Regional Growth Forecasts. Based on this comparison, a determination will be made as to whether or not the proposed project would alter the location, distribution, density, or growth rate of the human population in the area as compared to projected growth and plans. Impacts of the increased population in proximity to population-sensitive areas (e.g., the San Dieguito River Valley), other environmental impacts (e.g., traffic, air quality, noise), and the creation of additional demand on public services and utilities are discussed in general terms in this section. More detailed analyses of these issues are presented in the appropriate sections of this EIR.

Population/Demographics

Criteria for Significance Determination

The proposed project would have a significant impact on population/demographics if project implementation results in substantial adverse changes in the location, distribution, amount of growth or density, or growth rate of the human population at ultimate build out of the project in the census tract or subregional area where it is located above that which has been planned for.

Total Population Growth at Ultimate Build-out and Population Density

Prior to the designation of (21) Specific Planning Area, the San Dieguito Community Plan categorized the site with the following designations: (17) Estate Residential, for the more level portions of the SPA, (18) Multiple Rural Residential, for steeper slope areas, and (24) Impact Sensitive, for floodplain areas and areas within the San Dieguito River Valley. The existing General Plan land use category for the project is (21) Specific Planning Area with a development density designator of 0.4 (i.e., an average of 0.4 dwelling units per acre over the Santa Fe Valley SPA). These are the General Plan land use designations and development densities used in SANDAG's Series 7 population projections. At this density, the 3,163-acre site could potentially accommodate a maximum of 1,252 dwelling units not considering development constraints. Assuming 2.87 persons per household (SANDAG 1994), this would yield a total of 3,593 persons.

The project proposes ultimate development of up to 1,200 dwelling units over the 3,166 acres of the SPA, or an average density of 0.387 dwelling units per acre after slope/density calculations were considered. Assuming 2.87 persons per household, the proposed project would yield a total of 3,444 persons. This is the approximate amount of planned population growth attributed to the ultimate build-out of the Santa Fe Valley SPA considering development constraints. Therefore, development proposed by the Santa Fe Valley Specific Plan would not exceed planned population projections for Census Tract Number 170.16 or North San Diego Subregional Area Number 14. The proposed development density of 0.387 dwelling units per acre does not exceed planned densities for the site.

Growth Rate

According to the Santa Fe Valley Specific Plan, ultimate development shall be phased with the ability to provide adequate public facilities and services, and in accord with market demand. The character of development shall be compatible with plans established for adjacent areas and jurisdictions. Applications for subdivisions are to be considered along with a feasibility study and phasing process for the provision of public facilities and services. This process is expected to be a reflection of on-going economic/market trends, land use policy, and planning guidelines.

Based on SANDAG's regional growth projections and assumptions regarding the subregion's share of County-wide growth, ownership and income qualifications, and Santa Fe Valley's market share of the subregional growth, a market study prepared for the proposed project estimated that the Santa Fe Valley SPA could reasonably capture approximately 80 single family detached housing units per year up to ultimate build-out total for the SPA of 1,200 units (Economics Research Associates 1993). At this rate of development, the SPA would reach full build out in approximately 15 years. Adding 80 dwelling units per year would result in approximately 230 additional residents in-migrating into the SPA each year, which equates to an average annual growth rate of approximately 6.6 percent, relative to the first year of development.

According to Series 7, the average annual growth rate is projected to be 3.5 percent for the North San Diego Subregional Area Number 14 as it approaches the year 2010 (SANDAG 1988). The population of the SRA in 2010 is projected to be 93,018 persons. The

approximate annual average growth rate of the Santa Fe Valley SPA of 6.6 percent is in excess of the larger surrounding subregion. However, the proposed SPA would add an approximate population of 3,444 persons to the subregional total of 93,018, or roughly 3.7 percent of the total. Therefore, the accelerated growth rate of the SPA is considered relatively minor and incremental when viewed in the comparative context of the overall subregional area. Further, according to the San Dieguito Community Plan and the Santa Fe Valley Specific Plan, project phasing and growth rate will be in accord with the adequate provision of all requisite community public services and utilities.

Population Location and Distribution

Currently, the SPA is generally undeveloped. Full build out of the SPA would allow for the in-migration of approximately 3,444 persons over a 15-year period. This growth would be in accord with the County's General Plan, the San Dieguito Community Plan, and Series 7 Population Forecasts. Development of the SPA is not expected to displace any residents currently living within the SPA boundaries. Substantial in-migration to the general area, other than that which is planned for, or out-migration from the general area is not expected as a result of project implementation. Therefore, implementation of the project is not expected to alter the planned location or distribution of the human population in Census Tract Number 170.16, or North San Diego Subregional Area Number 14.

Public Services/Utilities

Criteria for Significance Determination

The proposed project would have a significant impact on public services/utilities if population growth-related issues associated with project implementation results in substantial increases in the demand for public services and utilities.

Public Services/Utilities

Implementation of the proposed Santa Fe Valley SPA project would generate additional demand in the community for public services and utilities. While the Santa Fe Valley SPA's effect on local public services/utilities would be minor and incremental, these effects would be ameliorated by the projects pro rata contribution to various funding sources for the provision of such services and utilities.

Please refer to section on Public Services and Utilities, Section 4.13, for a more detailed discussion of these issues.

Impacts to Population-Sensitive Resources

Criteria for Significance Determination

The proposed project would have a significant impact on population-sensitive resources if project implementation results in substantial adverse affects to population-sensitive resources onsite or other environmental impacts such as cumulatively adverse affects to traffic, air quality, or noise.

Sensitive Resources

The project proposes development in relatively undeveloped/undisturbed areas of the San Dieguito River Valley and in the surrounding hills. These areas contain certain sensitive biological and cultural resources as discussed in the pertinent sections of this EIR. The project proposes, however, the implementation of open space areas (i.e., Open Space I and II) which preserve as permanent open space the most sensitive resources and provide a buffer between those resources and areas proposed for development. As discussed in Section 4.2, Biology, and Section 4.3, Cultural Resources, the project would have a significant impact to certain onsite biological and cultural resources. In areas where significant adverse impacts to sensitive resources would occur, mitigation will be implemented and monitored to ensure that the impacts are mitigated.

Because the project would facilitate development to accommodate approximately 3,444 persons, the potential exists to cumulatively degrade air quality, and increase traffic, noise, and light. These effects are, however, expected to be minor and incremental and are, therefore, not considered significant.

Level of Significance

Project implementation would not result in substantial adverse changes in the location, distribution, amount of growth or density, or growth rate of the human population at ultimate build out of the project above that which has been planned for in the census tract or

subregional area where the project site is located. Therefore, the proposed project would not have a significant impact on population/demographics.

Implementation of the Santa Fe Valley Specific Plan would not result in substantial increases in the demand for public services and utilities. Therefore, no significant impacts to public services or utilities were identified.

Implementation of the Santa Fe Valley Specific Plan would not result in significant impacts to populations sensitive resources, with the exception of significant impacts to certain biological and cultural resources. Mitigation is proposed to reduce biological and cultural resource impacts.

4.11.4 Mitigation

No significant population/demographic or public service impacts were identified. Therefore, no mitigation is necessary.

Refer to Sections 4.2 and 4.3 of this EIR for mitigation measures proposed to reduce biological and cultural resource impacts, respectively.

4.11.5 Tentative Map Area Impacts

Generally, population/demographic and public service impacts are considered to be regional in scope and effect. Compliance with constraints to population growth such as General Plan land use designations and density requirements are addressed at the Specific Plan level. Therefore, these population-related impacts at the tentative map level would be the same as the Specific Plan Area level. Refer to Section 4.11.2 for a discussion of population-related impacts at the Specific Plan Area level of detail.

Balcor Subdivision Tentative Map Impacts

Criteria for Significance

The proposed project would have a significant impact on population-sensitive resources if project implementation results in substantial adverse affects to population-sensitive

resources onsite or other environmental impacts such as cumulatively adverse affects to traffic, air quality, or noise.

As discussed in Section 4.3, Cultural Resources, the Balcor Subdivision would impact certain cultural resources onsite. These impacts would be reduced to below a level of significance through implementation of proposed mitigation measures.

Balcor Subdivision Level of Significance

Certain cultural resources would be significantly impacted. This is a significant population-related impact to population-sensitive resources. These impacts would be, however, mitigated through mitigation measures proposed in Section 4.3.

Balcor Subdivision Mitigation

Refer to Section 4.3 for mitigation measures proposed to reduce impacts to cultural resources.

4.12 SOCIOECONOMICS

4.12.1 Existing Conditions

For the purposes of this analysis, the term "socioeconomics" describes the basic attributes and resources associated with the human environment, with particular emphasis on employment, income, and housing. These fundamental economic indicators are evaluated in detail in this section.

The California Environmental Quality Act (CEQA) does not mandate an analysis of socioeconomic affects in an EIR because economic activity or community character changes that result from the implementation of a project do not necessarily result in any effects on the biophysical environment, and are therefore beyond the scope of an environmental document. As a result, CEQA does not provide any specific guidelines for the analysis of socioeconomic issues.

However, CEQA does provide direction which is indirectly applicable to socioeconomic impact analyses. As such, CEQA can be used as a guide in the impact analysis process in determining the criteria for impact significance. CEQA Guidelines Section 15131 subd. (a) mandates that economic and social impacts of a proposed project in and of themselves must not be treated as significant effects on the environment. Rather, there must be a physical change resulting from socioeconomic affects of the project directly or indirectly before socioeconomics impacts can be considered significant (CEQA Guidelines Section 15131). Economic and social impacts would be relevant to the impact analysis if they result in significant environmental impacts. The impact analysis may trace a chain of cause and effect relationships from a proposed decision on a project through anticipated economic or social changes from the project to physical changes caused in turn by the economic and social changes. Additionally, if a project's physical impacts may cause economic and social consequences, the magnitude of the latter may be relevant in determining whether the physical impact is significant (CEQA Guidelines Section 15131 subd. [b]). CEQA Guidelines Section 15131 subd. (c) states that economic, social, and particularly housing factors shall be considered by public agencies, together with technical and environmental factors, in deciding whether changes in a project are feasible in order to reduce or avoid the significant effects on the environment.

The significance criteria in CEQA Appendix G that relate either directly or indirectly to socioeconomic impact analyses include the following:

- (k) inducement of substantial growth or concentration of population
- (m) displacement of a large number of people
- (u) disruption or division of the physical arrangement of an established community
- (y) converting prime agricultural land to non-agricultural use or impairing the agricultural productivity of prime agricultural land

The following socioeconomic issues were determined to be of importance and are evaluated in this section to determine existing baseline conditions:

- population growth characteristics in the region of influence
- direct and indirect project related employment
- income in the regional area
- local housing market/availability, housing affordability, and property values
- localized economic/commercial activity

Changes in the fundamental economic indicators may in turn influence related variables such as the provision of community services. Impacts on fundamental socioeconomic components may also result in environmental impacts associated with an increase in the demand for public services such as water and sewer, utilities, police and fire protection, and schools beyond the existing and/or planned capacity. Issues associated with the provision of public services and utilities are summarized in this section. For a detailed discussion of public services/utilities, refer to Section 4.13. The information presented in this section regarding the primary economic growth indicators (i.e., employment, income, and housing) represents the foundation for analysis of potential community service impacts presented in those later sections.

Typically, in addition to the aforementioned economic indicators, socioeconomic analyses evaluate population/demographics and growth. However, effects to the human population are evaluated separately and in more detail in Section 4.11 and are only summarized in this section.

Socioeconomic Setting

The proposed project would influence socioeconomic activity within the Region of Influence (ROI) surrounding and serving the project site. The ROI is the principal provider of goods and services, employment, housing, and public service to the project and will be the geographic area affected most by implementation of the project. For the Santa Fe Valley SPA, the ROI for socioeconomic activity consists of the North City Major Statistical Area (MSA) and its associated subregions as depicted in Figure 4.11-1. An overview of socioeconomic activity in the County of San Diego is also provided for the purposes of comparison and perspective.

San Diego County is divided into seven MSAs. MSAs are comprised of individual Subregional Areas (SRAs) and their associated census tracts. The western half of San Diego County accounts for approximately 99 percent of the region's economic activity, and is divided into six MSAs. The east half of San Diego County is one large MSA, called the Eastern County MSA. Despite this MSA's size, it is mostly undeveloped and sparsely populated, and does not therefore, represent a major component of the County's regional economy.

The Santa Fe Valley SPA project site is located in the North City MSA. The North City MSA is divided into eight Subregional Areas (SRAs). The project site is within the northernmost extent of the MSA called the North San Diego SRA. The North San Diego SRA is divided into nine census tracts. The project site is within Census Tract Number 170.16 (refer to Figure 4.11-1). Communities that fall within the North San Diego SRA include a small portion of Rancho Santa Fe, Fairbanks Ranch, Rancho Peñasquitos, Rancho Bernardo, and the undeveloped agriculture areas of Black Mountain Ranch, 4S Ranch, and Santa Fe Valley.

The San Diego Association of Governments (SANDAG), in cooperation with the 18 cities of the region and the County of San Diego, provides data on population, employment, and housing on both a regional and subregional level for the entire San Diego area. In addition, SANDAG generates growth projections, known as Regional Growth Forecasts, which project the rate of population growth that is likely to occur in the region based on current and projected trends in fertility, mortality, migration, land use, and public policy. The SANDAG Regional Growth Forecasts do not consider specific development proposals within the region, but make projections based on the build-out potential of existing land use

designations as outlined in adopted planning documents. SANDAG's Series 7 Regional Growth Forecast (Series 7), is a region-wide forecast for the period 1985-2010. The data presented in this section are based on Series 7.

The following specific resources are evaluated in this section:

- Population - Population is typically expressed in terms of the number of people residing within a region. Effects on population are evaluated in terms of potential in-migration to or out-migration from the ROI as a result of changes in labor demand.

- Employment - Employment within the ROI is assessed by determining the project's effect on the number and type of jobs in the ROI, and the total number of work force participants.

- Income - Income within the ROI is analyzed in terms of the increase or decrease in personal income caused by any project-related change in population and employment.

- Housing - Housing market characteristics within the ROI include the number and types of housing units available in the area, occupancy characteristics and vacancy rates, and housing affordability (especially among low/moderate income households).

The ROI considered for commercial activity would be of a lesser geographic extent than for the fundamental socioeconomic components described above because the implementation of the proposed project would primarily affect the specific area in which the Santa Fe Valley SPA is located. Therefore, the economic/commercial issues analysis provided in this section addresses only the area in the immediate vicinity of the proposed Santa Fe Valley SPA and does not address the entire San Diego region.

Existing Population

The following text on population/demographics for San Diego County is a summary. Refer to Section 4.11 for a more detailed discussion.

Since 1960, the population of San Diego County has grown dramatically: twice as fast as the rest of the state and three times faster than the nation as a whole. Population in the region is projected to grow for the foreseeable future, although at a slower rate than during the past 25 years.

An annual growth rate of 1.5 percent is projected for the County as a whole. By the year 2015, the North City MSA (which includes the project site) is projected to surpass the Central MSA to become the most populated MSA in the county. According to Series 7, the North City MSA is projected to have a 1.7 percent annual growth rate through the year 2010.

Population growth trends for the North County MSA, North San Diego Subregional Area and Census Tract Number 170.16 are shown in Table 4.12-1.

Table 4.12-1

SERIES 7 POPULATION GROWTH TRENDS

	1990 Population	Series 7 Population Projection for the Year 2010	Average Annual Growth Rate (1985 - 2010)
North City MSA	569,992	755,308	3.5%
North San Diego SRA	67,763	93,018	3.5%
Census Tract 170.16	11,370	15,610	3.1%

Source: SANDAG 1994

Existing Employment

Historically, the San Diego region has had a strong manufacturing employment base related to defense industry expenditures. The region's employment increased during the military build-up in the mid-1980s, and fell dramatically with the downsizing experienced in the late 1980s and early 1990s. Between 1980 and 1988, the economy of the San Diego region was based primarily on the wholesale/retail trade (16.8 percent), services (16.7 percent), government (15.9 percent), and military (13.9 percent) sectors of the economy (SANDAG

1994). Over this 8-year period, the average annual growth rate for all employment in the region was 4.1 percent, down from the 4.4 percent annually that occurred during the previous 8-year period (1972-1980) because of the recession of the early 1980s.

The economy of the region in 1990 was based primarily on the services (22.4 percent), wholesale/retail trade (19.4 percent), government (14.4 percent), and manufacturing (11.2 percent) sectors of the economy. The military sector, which was one of the strongest sectors of the economy in 1980, experienced a 10 percent decrease in employment during the period between 1980 and 1990. The resulting restructuring of the economy is, in part, responsible for the loss of over 75,000 wage and salary jobs between 1990 and 1993.

The MSAs with the highest regional employment include North City and Central and North County West. By the year 2000, nearly 60 percent of the jobs in San Diego County are estimated to exist in the Central and North City MSAs.

By the year 2000, the economy of San Diego County is projected to be based primarily on the services, retail trade, government, and manufacturing sectors of the economy. The industries projected to have the highest annual growth during this period are transportation, communication, utilities, services, and trade. Other growth industries in the region include self-employed/domestics, government, finance, insurance and real estate, manufacturing, and construction. Agriculture and mining are the only industries with a projected decline in employment.

The North City MSA is forecast to experience 25.0 percent growth (0.9 percent average annual increase) in employment between 1995 and 2015. The North City MSA relies primarily on the retail trade (16.5 percent), manufacturing of durable goods (11.8 percent), and the finance, insurance, and real estate (10.2 percent) sectors of the economy. Approximately 4.2 percent of the civilian labor force is unemployed, (SANDAG 1994).

The North San Diego SRA is forecast to have 70.2 percent growth (2.1 percent average annual increase) in employment between 1995 and 2015. This is primarily because of the future development projected for this area over the next 20 years. The North San Diego SRA relies primarily on the manufacturing (37.3 percent), services (25.0 percent), and wholesale/retail trade (16.9 percent) sectors of the economy, (SANDAG 1994).

Existing Income

As a result of the military build-up preceding World War II, San Diego's economy was transformed from an agricultural base to a manufacturing base primarily related to defense industry expenditures. Since the 1970s, the region's per capita income has stagnated as a result of the steady increase in service sector jobs. Service sector jobs are among the lowest paying jobs, with wages averaging 40 percent lower than those for manufacturing jobs. By 1992, the San Diego region's per capita income had fallen below both the state and the national averages.

The San Diego region continues to experience income and earnings rates that are below both statewide and national levels. This trend of low to moderate earnings has continued through the 1980s, with real per capita income growth falling to less than one-half of one percent per year, less than one-half the rate recorded at the state level and one-third the level recorded nationally (SANDAG 1992).

The 1990 household income medians within each MSA in San Diego County range from a low of $24,227 in the Central MSA to a high of $42,114 in the North City MSA, a spread of approximately 74 percent. Table 4.12-2 shows 1990 median household income and poverty levels for the San Diego Region, North City MSA, and North San Diego SRA. The North San Diego SRA, within which Santa Fe Valley is located, contains some of the wealthiest communities in the region including Rancho Santa Fe, Fairbanks Ranch, and Rancho Peñasquitos.

Existing Housing

Throughout the history of the San Diego region, economic booms and busts have governed the demand for housing. In the late 1980s, the demand for housing was caused in part by the economic expansion of the region, which resulted in the in-migration of people hoping to take advantage of the region's abundant jobs.

The San Diego County housing stock increased by approximately 255,000 housing units between 1980 and 1990. In 1990, there existed a total of 936,233 housing units within the market area. The 1989 total of 24,613 new units represented the lowest housing growth rate since 1984, a decline of 12 percent from 1988. This slowdown may be attributed to a combination of factors including rising interest rates, a softening of the economy, and/or

development restrictions imposed by local growth management policies (SANDAG 1990). In 1990, the vacancy rate for the San Diego Region was 6.2 percent.

Table 4.12-2

1990 MEDIAN HOUSEHOLD INCOME AND POVERTY LEVELS FOR THE SAN DIEGO REGION, NORTH CITY MSA, AND NORTH SAN DIEGO SRA

Statistical Area	Median Household Income	Persons Below Poverty Level
San Diego Region	$33,270	8.7%
North City MSA	$42,114	6.8%
North San Diego SRA	$49,348	5.2%

Table 4.12-3 shows 1990 housing type vacancy rates for the North City MSA and North San Diego SRA.

Table 4.12-3

1990 HOUSING TYPE AND VACANCY RATES FOR THE NORTH CITY MSA AND SAN DIEGO SRA

Statistical Area	Total Number of Housing Units	Housing Type	Vacancy Rate
North City MSA	234,167	63.5% single-family 34.2% multi-family 1.2% mobile home	6.2% (14,582 units)
North San Diego SRA	30,810	64.4% single-family 35.4% multi-family 0.2% mobile home	10.3 (3,170 units)

According to the 1990 Census of Population and Housing, the median housing value in the North City MSA in 1990 was $224,815, and the median housing value in the North San

Diego SRA in 1990 was $237,201. This is attributed to the high income housing that makes up communities in the SRA such as Rancho Santa Fe, Fairbanks Ranch, and Rancho Peñasquitos. By comparison, according to the 1990 Census of Population and Housing, the median housing value in the San Diego region in 1990 was $186,700 (SANDAG 1993).

There are currently only a few (approximately 20) widely scattered residences existing within the Santa Fe Valley SPA site. These residences are primarily single-family detached homes on large lots.

Existing Localized Economic/Commercial Activity

Economic/commercial activity varies, but is limited in the vicinity of the Santa Fe Valley SPA. The existing Lake Hodges is owned and operated by the City of San Diego, and currently provides recreational opportunities (e.g., boating, fishing, and hiking/trails) to the public. The community of Del Dios has limited commercial activity and supports a restaurant and tavern. Some agricultural/horticultural activity currently exists within the more level portions of the Santa Fe Valley SPA including citrus and avocado orchards, ornamental shrubs, and a wholesale plant nursery. The adjacent 4S Business Park and businesses in Rancho Bernardo and Rancho Peñasquitos provide employment opportunities in the remainder of the North San Diego SRA.

4.12.2 Specific Plan Area Impacts

The proposed project will directly and indirectly influence socioeconomic activity within the ROI. Direct effects are those impacts that are directly attributable to the project (e.g., an increase or decrease in available jobs, the expenditure of project dollars to purchase local goods and services, the migration of people to the area to seek employment, etc.). Indirect effects represent the additional socioeconomic activity that stems from the direct impacts via a "multiplier effect." For example, when employees of a new business are paid for their work, they spend a portion of their earnings on local goods and services. These expenditures create successive rounds of earnings and purchases. The number of times this money goes through different hands is called the "multiplier," and its value depends upon the diversity of goods and services available in the region. As the money continues to filter through the local economy, additional jobs may be created and additional migration to the area may occur, thereby causing new cycles of earnings and expenditures.

Indirect impacts that may be caused by a proposed project are later in time or farther removed in distance than direct impacts, but are still reasonably foreseeable. Indirect impacts may include growth inducing impacts and other effects related to induced changes in the pattern of land use, population density, or growth rate.

Population Growth Impacts

Criteria For Significance Determination

Uncontrolled or poorly planned growth can result in adverse impacts to population-sensitive resources. Therefore, population increases would be considered significant if they would exceed SANDAG Series 7 Regional Growth Forecasts projected for the region, or would result in uncontrolled growth beyond that which has been planned for.

Population Growth

Population growth associated with specific projects can be considered beneficial or adverse depending on the availability and capacity of required public services and infrastructure, as well as consistency with applicable growth management policies and goals. The SANDAG Series 7 Regional Growth Forecast does not consider specific development proposals within the region, but makes projections based on the build-out potential of existing land use designations as outlined in adopted planning documents.

The project's potential to induce growth both regionally and locally is discussed in Section 8.0, Growth Inducing Impacts. The project's potential to result in substantial adverse changes in the location, distribution, amount of growth, or density of the human population; substantial increases in the demand for public services and utilities; or affects to population-sensitive resources onsite or other environmental impacts such as cumulatively adverse affects to traffic, air quality, or noise are discussed in Section 4.11, Population/Demographics. As discussed in this section, the project would not result in population growth-related impacts.

Projected/planned population increases for the region would not be exceeded or as a result of the project. No significant impacts to population would occur.

Impacts to Employment

Criteria For Significance Determination

Adverse impacts to population-sensitive resources can result in the employment-related effects of in-migration. Therefore, a significant impact to employment would occur if the project's labor requirements could not be met by the local labor force subsequently requiring substantial in-migration, or if project implementation would adversely affect existing employment rates.

Employment

The majority of employment, especially construction-related jobs, associated with the project is expected to be met by the local labor force. The relatively low-paying jobs associated with service-related employment that would support the project's proposed commercial activities (e.g., resort, golf course, congregate care) would also be filled by the local labor force. Implementation of the project would have a beneficial effect on the employment rates in the San Diego region, but substantial in-migration in order to fill project-related jobs would not be expected.

Implementation of the project would incrementally infuse direct and indirect monetary benefits into the local and regional economy. Secondary employment in other trades would benefit as project-related expenditures filter through the local and regional economy. Jobs generated from the project would be primarily in the construction and service trades. Construction would occur in phases over the next 15 years.

The majority of the construction- and service-related jobs associated with the project would be filled by local labor force participants. Therefore, implementation of the project would have a beneficial effect on employment in the ROI.

Impacts to Income

Criteria for Significance Determination

A significant income-related impact would occur if the project resulted in a substantial decrease in average regional personal income levels.

Income

The majority of the construction-related jobs associated with the project would be filled by local labor force participants. These jobs would be temporary/short-term but would be relatively high-paying. Service sector employment associated with the commercial activities proposed by the project. would be relatively low-paying jobs. The net increase in jobs would result in an economic benefit to the region. Through direct employment-related increases in personal income associated with construction-related jobs, and the associated increases in purchases of goods and services as a result of overall increased employment. monies would filter through the economy, benefiting both businesses and household income in the ROI.

Impacts to Housing

Criteria For Significance Determination

A significant impact would occur if the housing demand generated by the project-related population exceeded the available housing supply in the ROI; or if the proposed SPA is not consistent with low-income "fair share" housing goals, policies, or regulations.

Housing

The Santa Fe Valley SPA proposes primarily low-density, high-amenity, estate-type homes with ancillary uses such as golf courses, a resort, and public facilities. The surrounding planned or existing communities of Rancho Santa Fe, Fairbanks Ranch, Black Mountain Ranch, Rancho Cielo, Mount Israel. and the like, are all generally similar types of development. The 1990 median housing value in the North City MSA was $224.815. The 1990 median housing value in the North San Diego SRA was $237.201. Further. housing development in the North San Diego SRA is relatively recent. Approximately 62 percent of all housing units in this SRA were built in 1984 or later. Therefore, these homes are relatively new. Since the project proposes new residential development of a type is similar to other surrounding relatively new residential development, no substantial changes in housing values are expected.

Displacement of Existing Residences or Businesses

Criteria for Significance Determination

A significant impact would occur it the project results in the uncompensated physical displacement of existing residential development or active commercial activity.

Residential Development

There are currently only a few (approximately 20) widely scattered residences existing within the Santa Fe Valley SPA site. These residences are primarily single-family detached homes on large lots. Development of the Santa Fe Valley SPA would not displace most of the existing homes within the SPA boundaries. These residences would be maintained in their existing condition. However, as individual property owners begin to develop their land towards more intensive uses, some homes or other land uses (primarily agricultural) would be replaced. Approximately five homes would be replaced by development currently proposed within the SPA. Because of the limited nature of this replacement, this is not considered a significant impact.

Commercial Agricultural Activity

Some agricultural/horticultural activity currently exists within the more topographically level portions of the Santa Fe Valley SPA including citrus and avocado orchards, ornamental shrubs, and a wholesale plant nursery.

Development of the Santa Fe Valley SPA would replace some limited existing commercial agricultural/horticultural activities throughout the SPA. However, the residential and commercial development that would replace these agricultural activities is proposed by the owner(s) of the site. Residential and commercial development would be implemented in lieu of the onsite commercial activities. Therefore, the loss of the site-specific agricultural and horticultural enterprises would not result in any substantial impacts to net levels of commercial activity onsite.

4.12.3 Level of Significance

Population/Growth

Projected/planned population increases would not be exceeded as a result of the project. Therefore, no significant population impacts would occur.

Employment

Project-related effects would be beneficial. No significant impacts to employment would occur.

Income

Construction-related effects on personal income and subsequent increases in economic activity would be beneficial. No significant adverse impacts to average regional personal income would occur.

Housing

No significant impacts to local or regional housing availability or local housing value would occur.

Displacement of Existing Residences or Businesses

No significant impacts to existing residences, or businesses would occur.

4.12.4 Mitigation Measures

No significant impacts were identified. Therefore, no mitigation is required.

4.12.5 Tentative Map Area Impacts

Socioeconomic impacts are generally considered to be regional in scope and effect (i.e., occur throughout the ROI or at an area-wide extent, and not specific to individual proposed tentative maps within the SPA boundaries). Compliance with applicable socioeconomic

goals such as General Plan land use designations. General Plan housing policy, and community character goals are addressed at the Specific Plan level. Therefore, any socioeconomic impacts at the tentative map level of detail would be the same as the Specific Plan Area level. Refer to Section 4.12.2 for a discussion of socioeconomic impacts at the Specific Plan Area level of detail.

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4.13 PUBLIC SERVICES AND UTILITIES

This section addresses the availability of public services and utility infrastructure for the proposed Santa Fe Valley Specific Plan. For purposes of this public services and utilities analysis. the future population projections for Santa Fe Valley are based on a population figure of 2.87 persons per dwelling unit from the SANDAG San Diego Regional Population and Housing Estimates for 1994.

Each of the following services or utilities are discussed in a separate subsection: fire protection and emergency services; law enforcement; schools; library facilities; water and wastewater service; animal control facilities; solid waste disposal; and gas and electricity.

4.13.1 Fire Protection and Emergency Services

Existing Conditions

Santa Fe Valley is served by the Rancho Santa Fe Fire Protection District (District). Formed in 1946, the District currently protects an area of approximately 45 square miles and a population of 18,000 (Neville 1995). The District maintains a response time standard of 5 minutes providing both structural and watershed protection. The District currently operates four stations, three of which would service Santa Fe Valley (4S, Rancho Santa Fe and Fairbanks Ranch) (Figure 4.13-1). Two of these three stations are within the San Dieguito Community Plan area.

The 4S station located east of the project site, is currently a temporary station located at 10603 Rancho Bernardo Road, with three full-time suppression staff who are also Emergency Medical Technicians. According to the Fire Chief, with the current configuration, the response time from the 4S station to the Santa Fe Valley SPA is approximately 5 minutes (Willis 1994). The 4S station is planned to relocate west of its current location within the southeastern portion of the Santa Fe Valley SPA (see Figure 4.13-1) (Willis 1994). The future location has been sited in order to ensure an adequate response time of 5 minutes, for both Santa Fe Valley and 4S Ranch. Once the 4S station is relocated within the Santa Fe Valley SPA, it will become a permanent station, designated as station #262. This station would provide the first response to most of Santa

The Rancho Santa Fe (RSF) station, located at 16936 El Fuego, currently has 10 full-time fire suppression staff assigned. The response time from the RSF station to the Santa Fe Valley SPA is about 8 minutes, and approximately 10 minutes from the Fairbanks Ranch station.

Currently, the District has access to five pumpers, two water-tenders, one brush engine, one light rescue vehicle, and two ambulances. An additional pumper and brush engine are budgeted for purchase in 1995 (Willis 1994).

The District provides emergency medical services with full-time suppression personnel, EMT trained and qualified. Paramedic services are provided through the County Service Area (CSA) No. 17, which is the San Dieguito Ambulance District. The CSA is a tax based area that funds ambulances staffed with paramedics. CSA No. 17 operates two paramedic ambulances, the nearest one to Santa Fe Valley is housed at the Solana Beach Fire Station, 102 N. Nardo, and the other at Scripps Encinitas Hospital, off Devonshire Drive, near Santa Fe Drive. These units have an approximate response time of 15 and 20 minutes to the project area, respectively. If these units are unavailable for response, then Basic Life Support (BLS) level ambulances operated by EMT-D firefighters, rather than paramedics, would respond from the Rancho Santa Fe, Fairbanks, Del Mar, Solana, and Encinitas Fire Departments.

Wildland fire suppression is provided to the area through the California Department of Forestry (CDF) on a seasonal basis. The CDF serves approximately 2,200 square miles of land within the County of San Diego (over 50 percent of the County's total land area) and operates 18 stations and one air attack base (Eidsmoe 1994). Ten stations are closed during the non-fire season (four months of the year), while the remaining eight stations are open year round (County of San Diego Public Service Element 1991). The CDF provides protection from wildfires in those areas not within a specific district. Location from the SPA and response times of the CDF stations that cover the specified area are as follows:

- San Marcos Fire Station — 10.4 miles - 15 minutes
- Valley Center Fire Station — 19.6 miles - 26 minutes

SECTION 7
GROWTH INDUCEMENT

Section 15126(g) of the California Environmental Quality Act (CEQA) Guidelines requires a discussion of the potential growth-inducing impacts of a project: described as "the ways in which the proposed project could foster economic or population growth. or the construction of new housing, either directly or indirectly, in the surrounding environment." A project can induce growth by reducing or removing barriers to growth. for example the extension of new utilities infrastructure into a previously undeveloped area, or by allowing an amenity that may attract new population or economic activity. Growth inducement may place increased demands on existing community facilities. Certain growth inducing impacts may facilitate or exacerbate the effects of other activities, either individually or cumulatively, that could result in a significant effect to the environment. Section 15126 of the CEQA Guidelines cautions that growth in an area must not be assumed to be necessarily beneficial, detrimental, or of little significance to the environment.

The effects of development in Santa Fe Valley would generally be minor and incremental. Based on SANDAG's growth projections and assumptions regarding the subregion's share of County-wide growth, ownership and income qualifications, and Santa Fe Valley's market share of the subregional growth, it is estimated that Santa Fe Valley could reasonably capture approximately 80 single-family detached housing units per year up to ultimate build-out total for the SPA of 1.200 units, (Economics Research Associates 1993). This would represent a potential to add approximately 3,444 persons to the area.

The project also proposes development of recreational facilities such as golf courses, a complementary resort-style hotel. and a small retail/service oriented commercial area. However. the golf and resort facilities represent a relatively low intensity, passive land use. The scale of commercial activity will be limited and its market share is anticipated to generally draw from areas within the immediate vicinity around the SPA. Therefore, recreational and commercial amenities associated with the project would not attract a substantial amount of economic activity or new population to the area.

The proposed project would require the extension of public utilities and services to serve the project site. However, the provision of utilities and services to the project by existing services would not introduce services to other. previously unserviced areas. Many areas around and adjacent to the Santa Fe Valley SPA site are already developed and serviced.

Therefore. the proposed project would not facilitate growth in unserviced areas located between the project site and currently serviced areas.

Much of the developable land in the general area has already been built out or is planned for development. A substantial portion of the existing or planned development is at considerably higher densities than that proposed by the Santa Fe Valley SPA project. In 1993. almost 7.500 detached housing units were proposed in the market area in 50 separate projects (Economics Research Associates 1993).

Most of the development activity near Santa Fe Valley is associated with planned or partially built Carmel Valley, the North City Future Urbanizing Area. La Costa. 4S Ranch. and Rancho Cielo developments. Other existing County communities in the area include Del Dios. Rancho Santa Fe. and Fairbanks Ranch. These communities are generally large-lot. high amenity, single-family detached residential developments. The Santa Fe Valley SPA project would result in development which is similar to the surrounding area. Therefore. the proposed project would not attract a new form of land use to the area or drastically alter the existing community character. (Refer to Section 4.1).

The primary controls to growth on the project site are the existing land use designations and zoning, which require low density development and open space preservation. Since, according the San Diego County General Plan, the project site is currently planned for residential development. and the project proposes residential development densities which are not in excess of the allowable densities. development of the site. according to the Specific Plan. would not be growth-inducing.

SECTION 8
CUMULATIVE IMPACTS

8.1 INTRODUCTION

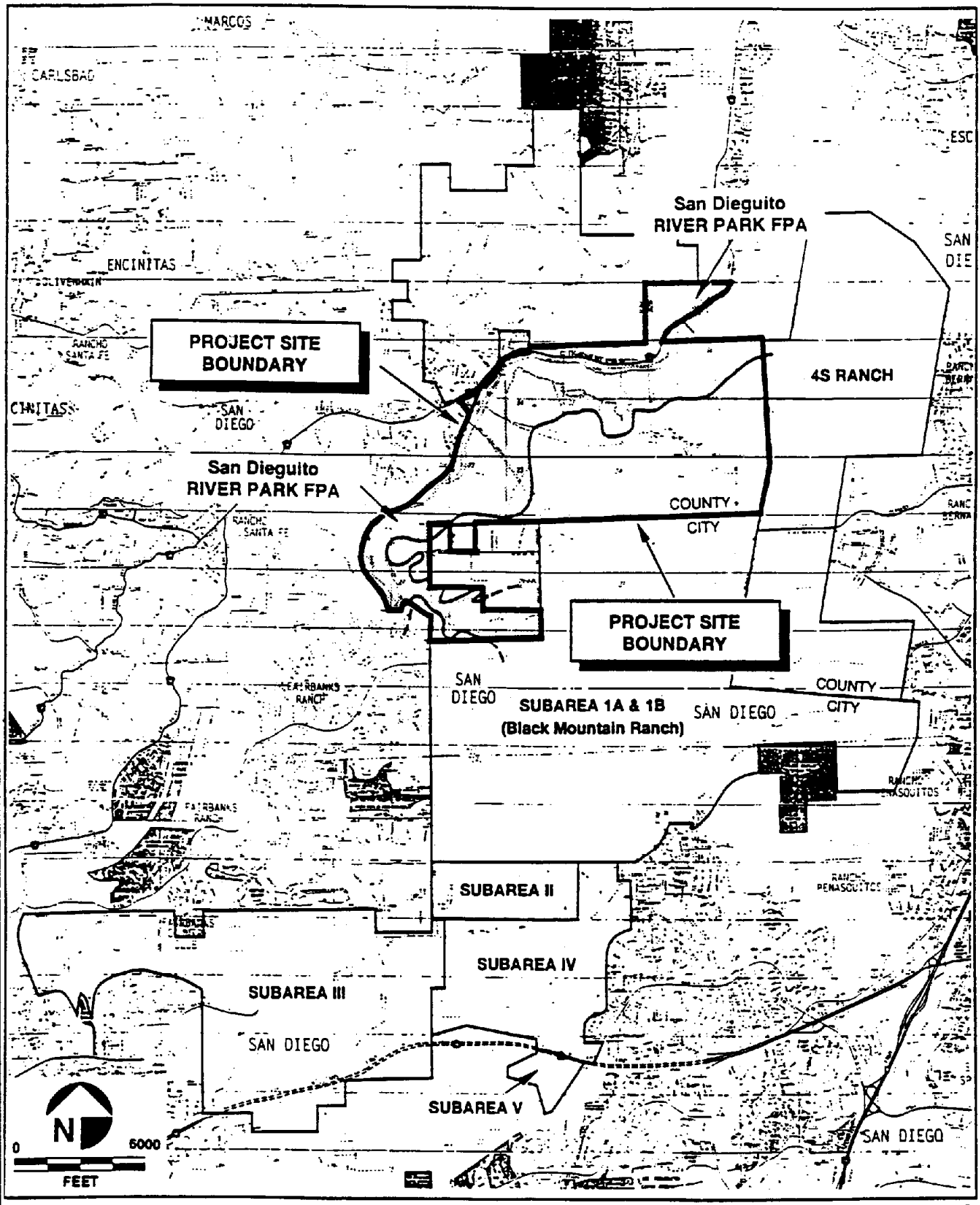
Section 15130 of the State CEQA Guidelines requires that "Cumulative impacts be discussed when they are significant." Cumulative impacts involve individual effects which may increase in scope or intensity when considered together. Such impacts typically involve a number of local projects, and can result from individually incremental effects when these collectively increase in magnitude over time. The CEQA Guidelines require that an evaluation of cumulative impacts include either:

- a list of past, present, and reasonably anticipated future projects producing related or cumulative impacts or

  a summary of projections contained in an adopted general plan or related planning document which is designed to evaluate regional or area-wide conditions.

Analysis of these data is required to include a summary of anticipated direct and cumulative impacts, and potential options for avoiding or mitigating significant cumulative effects. This cumulative impacts section provides a summary of the characteristics and impacts of related, approved, and proposed development activities in the proposed project vicinity, as well as their cumulative impacts.

Potential cumulative impacts associated with the implementation of the Santa Fe Valley Specific Plan are also considered with potential impacts from the developments proposed within the vicinity of the Santa Fe Valley SPA. The approximate boundary for this discussion extends south to SR-56, east to I-15, north to include the approved Rancho Cielo Specific Plan, and westward to include the communities of Fairbanks Ranch and Rancho Santa Fe. Figure 8-1 depicts the region of potential cumulative effect and the general locations of each of the project sites, in relation to the Santa Fe Valley SPA. The area of analysis may, however, vary depending on the issue area discussed. For example, for more regional issues such as traffic circulation or air quality, a larger area is investigated. The potentially significant impacts are identified and discussed for specific issue areas. These issue areas include land use, biological resource, cultural resources,



OGDEN

Cumulative Project Locations

FIGURE

8-1

visual quality/aesthetics. traffic/circulation. noise. air quality. hydrology/water quality. geology/seismicity/soils. paleontological resouces. socioeconomics. and public utilities and services.

There are ten major projects either recently approved. planned. or proposed for development in the project vicinity. These include Black Mountain Ranch and the other associated subareas that make up the North City Future Urbanizing Area (NCFUA) directly adjacent to the south. the proposed 4S Ranch Specific Plan to the east. the Rancho Cielo Specific Plan directly adjacent to the north. the San Dieguito River Park Concept Plan. the Moosa/Hodges Alternative as part of the County Water Authority's Emergency Water Storage Project. the City of San Diego's Lake Hodges Pump Station and Pipeline project. and the OMWD Phase I Reclaimed Water Distribution and Storage System. The following is a discussion of each of these projects. The general locations of these projects are shown on Figure 8-1 and their associated project characteristics are listed in Table 8-1.

8.2 APPROVED OR PLANNED DEVELOPMENT

North City Future Urbanizing Area (NCFUA)

The City of San Diego NCFUA is comprised of over 12,000 acres located south and west of the project site (see Figure 8-1). The NCFUA is the Future Urbanizing Area (FUA) as defined under the City's Growth Management Plan. The FUA is land designated for future development once a plan for the development is adopted and the area is redesignated to Planned Urbanized Area (PUA). In October 1992, the Framework Plan for the NCFUA was adopted to provide an environmental and land use guide for cohesive. long-range development within the NCFUA. Approximately 6,300 acres were designated for development and approximately 5.900 acres were designated for retention as predominantly open space. Approximately 14.800 residential units with an estimated population of 38,400 people would be generated under the land use densities identified in the Framework Plan.

In 1985 the City of San Diego Proposition A passed which requires a majority vote of the people to shift the Future Urbanizing Area land use designation to a Planned Urbanizing Area (referred to as a "phase shift"). The NCFUA was divided into five separate subareas (I. II. III. IV and V), each requiring development plans at a specific plan level of detail to be prepared based on the land use designations and development densities provided in the

Table 8-1

CUMULATIVE PROJECTS LIST

Project	Acreage Total	Proposed Development	Proposed Open Space	Buildout Year Total
City of San Diego NCFUA				
Subareas 1A and 1B	4,172	1,295	2,877	1,119 DUs* (1,217 DUs according to NCFUA Framework Plan)
Subarea III	2,725	1,375	1,350	6,500 DUs 9 acres commercial
Subarea IV	1,518	1,051	465	4,047 DUs
County of San Diego				
4S Ranch SPA	2,891	1,119	1,772	5,365 DUs 12 acres commercial
Rancho Cielo SPA	2,815	1,126	1,689	770 DUs 28 acres commercial
Santa Fe Valley SPA	3,163	1,759	1,404	1,200 DUs 7 acres commercial
Non-Development Projects				
San Dieguito River Valley Regional Park	80,000	–	–	–
Emergency Water Storage Project				
Lake Hodges Pump Plant and Pipeline				
OMWD Phase 1 Reclaimed Water Distribution and Storage System				

* DUs = Dwelling Units

Framework Plan. Each specific plan is to be prepared prior to a phase shift in land use designation from FUA to PUA. In accordance with Proposition A. the City of San Diego included a proposition on the City-wide ballot in June of 1994 to shift the NCFUA land use designation from FUA to PUA.

The phase shift proposition on the June 1994 ballot did not pass and consequently development within the NCFUA is currently limited to what is permitted under the City's Progress Guide and General Plan. This density could vary from 1 dwelling unit per 10 acres, under current A-1-10 zoning, to 1 dwelling unit per 4 acres, under certain conditions per City Council Policy 600-29. Based on the analysis contained in the NCFUA Final EIR, if the phase shift is not approved, buildout for the NCFUA under current regulations would be limited to a maximum of 3,750 dwelling units. Unless a future vote of the people approves a phase shift in the FUA, development within the NCFUA will, thus, occur at a relatively slower pace and at a lower density than that projected in the Framework Plan. In addition, the future completion of a key east-west freeway linkage, SR56 between Interstate 5 and Interstate 15 through the NCFUA, is uncertain because of its dependency on the approval of the phase shift.

The cumulative analysis in this EIR evaluates potential cumulative affects considering the potential future buildout of the NCFUA under the Framework Plan. The following describes specific development plans that are associated with each subarea development for implementation under the Framework Plan.

For purposes of this discussion. Subareas II and V will not be discussed because of their distant location from the Santa Fe Valley SPA.

Subareas IA and IB. The 4,172-acre subarea I is divided into two subareas located directly south of the Santa Fe Valley SPA (see Figure 8-1). These areas are called: Black Mountain Ranch North (Subarea IB) and Black Mountain Ranch South (Subarea IA). The Black Mountain Ranch project was originally proposed in 1990 as the first proposed project implementing the Framework Plan.

As a result of the failed phase shift from FUA to PUA, the Black Mountain Ranch project has been revised to propose 1,119 dwelling units, including 179 affordable housing units under the current allowable densities in the City's General Plan (Erkel 1995). The project will not be allowed to exceed the maximum allowable density of 1 dwelling unit per 4 acres

per existing entitlements under the City's General Plan. The other components of the original project have not been revised and include two golf courses, community parks, and open space within the San Dieguito River Valley Park FPA. A Notice of Preparation (NOP) for the revised Black Mountain Ranch project is currently being prepared and an EIR will eventually be prepared. However, under the Framework Plan an additional 163 residences are still proposed and are depending on a phase shift approval.

Subarea III (Pacific Ranch). The Draft Subarea III Plan proposed development of up to 6,500 dwelling units, 400,000 square feet of commercial and office land uses, a 370,000 square-foot employment/City facility center on approximately 1,375 acres. The remainder of Subarea III would be dedicated open space. A mixed use core area is proposed at the intersection of Del Mar Heights Road and Black Mountain Road approximately six miles from the project site. The residential development type would be planned compact residential. An estate-type residential area is proposed in the western portion of the subarea. The mixed use community core would contain a community park, fire station, police station, and a library.

Subarea IV(Torrey Highlands). The Torrey Highlands project is located to the south of the project site. Proposed development for this project include a pedestrian-oriented community with two mixed-use centers and a 18-hole golf course, two elementary schools, and ten one-acre neighborhood parks as focal points to three residential neighborhoods on approximately 1,200 acres.

4S Ranch General Plan Amendment and Specific Plan

Located immediately adjacent to the east of the Santa Fe Valley project site, 4S Ranch consists of a 3,525-acre Specific Plan Area. Of this area, a 634-acre parcel is currently designated as Current Urban Development Area (CUDA) and is developed as an industrial business park. The remaining 2,891 acres are designated as Future Urbanizing Development Area (FUDA) and identified under the Community Plan as (21) Specific Planning Area with no density allocated. A proposed development project for 4S Ranch includes a mixture of 5,365 dwelling units, approximately 1,814 acres of park and open space uses, and a 12-acre central commercial area. The proposed overall density of the 2,891-acre portion of the Specific Plan is 1.85 dwelling units per acre. The Draft EIR for the proposed 4S Ranch Specific Plan is expected to be circulated for public review in 1995.

Rancho Cielo Specific Plan

The Rancho Cielo Specific Plan is located directly north of Santa Fe Valley on the north side of the Del Dios Highway. The Rancho Cielo Specific Plan was approved in 1981 and consists of 770 dwelling units on 2,815 acres. Other approved uses for the Rancho Cielo project include an equestrian center, a neighborhood commercial center, a 6-acre village center, fire station, a water reclamation facility, and 1,689 acres of open space. The project is expected to begin construction in fall of 1995 and be completed in approximately 7-10 years (Middlebrook 1995).

San Dieguito River Valley Regional Open Space Park

The San Dieguito River Valley Regional Open Space Park is an adopted Concept Plan for a 55-mile long regional park along the San Dieguito River Valley. The vision of the Concept Plan for the park reflects a commitment to protect the area's natural waterways and associated ecosystems, preserve its unique natural, cultural and agricultural resources, retain a regional network of wildlife corridors, and provide open space recreation areas for the public (JPA 1994).

For planning purposes, a Focused Planning Area (FPA) was established along the river valley in order to serve as a regional planning boundary that incorporates entire viewsheds of the river valley and its major tributary canyons. The FPA for the River Park encompasses 80,000 acres and extends for 55 miles from the desert just east of Volcan Mountain to the ocean at Del Mar. As defined in the Concept Plan, the trail system for the Park, designated as the "Coast to Crest Trail", is intended to enhance public awareness and enjoyment of the park's unique environment. Portions of the trail system will be used for nature trails and interpretation in an effort to promote continued appreciation of the Park and its many significant resources. The trail system is proposed as two separate trail types: a hiking/equestrian trail, and a separate suitably-surfaced bicycle/wheelchair/jogging path. Both trails are proposed to begin near the beach at Del Mar and run generally uninterrupted to the eastern FPA boundary. Where possible, the two trails will not use the same alignment so that different experiences will be offered. Some portions of the trail system have already been developed within the Cleavenger Canyon area located in the central portion of the FPA, and a 2-mile trail segment within the San Pasqual Valley portion of the FPA (JPA 1994).

The San Dieguito River Park FPA encompasses a large portion of the Santa Fe Valley SPA. The Santa Fe Valley Specific Plan acknowledges this by requiring the areas within the park's viewshed to undergo design review to ensure compatible development as part of the implementation strategy of the Specific Plan. Figure 8-1 depicts the FPA in relation to the Santa Fe Valley SPA. For more information of this project in relation to Santa Fe Valley, refer to Sections 4.1 and 4.4, Land Use and Visual Quality/Aesthetics, respectively.

Emergency Water Storage Project

The Emergency Water Storage Project has been proposed by the San Diego County Water Authority (Authority) to identify alternative solutions for mitigating the risk of severe damage to and severage of aqueducts or pipelines that exist within the Authority's jurisdiction. The Authority is a State chartered agency charged with the responsibility of distributing water through it's pipelines to local water districts that are member agencies. A combination of four new or expanded reservoir sites are being considered for the Emergency Water Storage Project. Each reservoir requires a pipeline system and several pump stations. These components would deliver water to the reservoir and send water to the existing aqueduct system when needed for emergencies. Each of these alternatives are being evaluated in an EIR/EIS that is expected to be released to the public in September of 1995. The preferred alternative has not been determined at this time, but will be identified in the FEIR/FEIS in late 1995.

A pipeline associated with the Moosa/Hodges alternative would be located within the Santa Fe Valley SPA. The Moosa/Hodges alternative would require construction of a 48-inch diameter, 2.3-mile long pipeline extending from the proposed pump station 6 (PS 6) at Lake Hodges to the Second Aqueduct which transverses the SPA in a southeasterly direction (see Figure 8-1). In relation to the project area, the proposed pipeline would enter the project SPA to the north and continue to run along the San Dieguito River and then would shift to a south direction, between the boundaries of the McCrink Ranch and Balcor Tentative Map areas. From there it would connect to the Second Aqueduct to the west. The proposed pipeline would have a corridor buffer width of approximately 150 feet wide and is projected to impact approximately 39 acres in the Santa Fe Valley SPA.

City of San Diego's Lake Hodges Pump Station and Pipeline

Independant of the County Water Authority's Emergency Water Storage Project, a pipeline has been proposed by the City of San Diego Water Utilities Department to connect Lake Hodges to the City water system, in order to allow for the reservoir to provide needed emergency water storage to the entire City. A connection to Lake Hodges would entail the construction of a large pump station and pipeline. A Pipeline and Pump Station Feasibility Study has recently been conducted to investigate the feasibility of connecting Lake Hodges to the City water system. Five pipeline alternatives were evaluated: the preferred alternative (2) would traverse the Santa Fe Valley SPA (City of San Diego 1995a).

The proposed alternative 2 begins at a pump station at Lake Hodges and follows an alignment downstream to the west. The pipeline alignment is proposed to cross the San Dieguito River, and intersect with the Santa Fe Valley SPA along the northeastern boundary of the McCrink Ranch Tentative Map area. Finally, it would continue south to Artesian Road. A decision of whether or not to proceed with this project is anticipated to be made by August 1995 (City of San Diego 1995a).

Olivenhain Municipal Water District Phase 1 Reclaimed Water Distribution and Storage System

Olivenhain Municipal Water District (OMWD) is in the process of planning a non-potable water delivery system that would deliver approximately 1,300 acre-feet per year of reclaimed wastewater and raw water to future development located in the southeastern portion of the OMWD. Future development to be served would include the Santa Fe Valley SPA, the Rancho Cielo SPA, and the 4S Ranch SPA. Facilities to distribute the non-potable water include reservoirs, pump stations, pressure reducing stations, and pipelines. The system is generally located to the west of the Santa Fe Valley SPA and crosses both the Del Dios Highway and the San Dieguito River. A Final Draft Master Plan for this project was completed in April of 1995.

8.3 ASSESSMENT OF CUMULATIVE IMPACTS

Land Use

Other projects proposed for areas in proximity to the Santa Fe Valley SPA would have the same land use concerns as the Santa Fe Valley Specific Plan in terms of compatibility with other adjacent land uses, compatibility of land uses internal to the projects, and project consistency with applicable land use policies, designations, and zoning. All of these issues are or will be addressed within the environmental review of each specific project and thus will not be repeated here. As depicted in Figure 8-1, various residential uses are planned to the east, north, and south of the Santa Fe Valley SPA. Other potential future land uses in the area include open space/park lands, water pump plants and pipelines, and a reclaimed waste water plant.

From a cumulative standpoint, the other projects proposed in the vicinity of Santa Fe Valley would continue a pattern of land conversion from undeveloped or underdeveloped land to one of urban/residential development. Most, if not all, of this development would occur in open space areas or lands under cultivation. The total gross acres proposed for development on the Santa Fe Valley SPA and other projects, would be more than 7,700 acres. The cumulative loss of this open space and agricultural land would be a significant unavoidable impact of implementation of the Santa Fe Valley Specific Plan in conjunction with the other projects proposed for the area. Most of the cumulative development proposed in the area would not result in significant land use conflicts other than those already discussed in Section 4.1, Land Use.

Biological Resources

Over 17,000 acres of proposed or approved projects are planned in the vicinity of the Santa Fe Valley Specific Plan Area (see Table 8-1). A substantial portion of this acreage would be directly impacted by development and the remaining area is likely to be indirectly impacted by edge effects and by habitat fragmentation. Impacts were determined to be cumulatively significant based on several criteria including: 1) the value of the resource as habitat or a wildlife corridor, 2) the potential for the occurrence of sensitive and/or listed species, and 3) the rarity of uniqueness of the resource within the region. Cumulative and indirect impacts, and mitigation measures are discussed in detail in Section 4.2, Biological Resources, and in Appendix C, Biology Technical Report.

Generally, the loss of vegetation and habitat in the SPA represents a cumulative, significant impact in a regional context, especially given the number of other proposed and approved projects in the area and the sensitivity of the habitats. Many plant and animal species, specifically federal C1 and C2 candidate species and CNPS List 1B and List 2 species, that are not considered significant on a project-specific basis do comprise cumulatively significant impacts when the sum of all these projects are taken into account. These species are most commonly found in coastal sage scrub habitats in the area, but may also occur in wetland and chaparral habitats along the coastal plain.

The County considers all impacts to coastal sage scrub to be significant (both locally and cumulatively) because of the sensitivity of this habitat. The sensitivity has increased with the listing of the coastal sage scrub-dependent bird, the California gnatcatcher, as a federally threatened species. The area, including the Santa Fe Valley SPA, supports a large portion of a regionally important population of gnatcatcher, in addition to several other sensitive species. Therefore, impacts to coastal sage scrub within the SPA and surrounding area are cumulatively significant.

Impacts to southern maritime chaparral, perennial grassland, and coastal live oak woodland would sustain relatively small acreage impacts at a project-specific basis, but these are considered cumulatively significant on a regional basis because of their rarity and capability to support declining species. The loss of wetlands is also considered a significant cumulative impact. Although the direct impacts to nonnative grassland are not significant, the cumulative impacts to nonnative grassland are significant because of the loss of foraging habitat for raptors.

While many of the impacts identified can and should be mitigated on a project-specific basis, other impacts are difficult for any one project to adequately address. Nonetheless, these large-scale habitat losses result in cumulatively significant regional impacts. Development of specific planning areas, such as Santa Fe Valley, 4S Ranch, and the NCFUA, provides the opportunity for large-scale, integrated conservation of local resources that is generally not feasible with parcel-by-parcel development. These conservation efforts can be particularly effective when combined with regional habitat management plans (HMPs).

Participation in large-scale regional HMPs such as the Multi-Species Conservation Program (MSCP) or the Natural Communities Conservation Program (NCCP), allows coordinated regional resource conservation efforts, and the reduction of cumulative impacts to sensitive species and habitats. Preservation of significant vegetative associations in the SPA in a configuration that links these habitats to other adjacent open space areas is necessary to reduce cumulative impacts to vegetation and sensitive wildlife species such as the California gnatcatcher. Preservation of a large portion of the coastal sage scrub habitats on the SPA as open space in conformance with an adopted NCCP will adequately mitigate cumulative upland habitat and species impacts from this project. The Santa Fe Valley SPA is part of the Lake Hodges subarea plan within the NCCP planning process. The County in consultation with the property owners and resource agencies have tentatively negotiated an open space design for Santa Fe Valley which would satisfy that portion of the local subarea plan. An open space design to provide adequate habitat to support sensitive species would mitigate cumulative biological resource impacts.

Cultural Resources

Analysis of existing data resulted in the determination that 74 of the cultural resource sites within the Santa Fe Valley SPA are important or potentially important according to CEQA criteria. Site types represented are, in descending order of prevalence: lithic scatters, bedrock milling sites, occupation sites, quarry sites, temporary camps, historic structures, rock art sites, and historic trash deposits. These represent a varied cross section of cultural resources with regard to both age, exploitation, and cultural affiliation. As currently designed, 32 of these important sites would be significantly impacted. These sites, along with sites that will not be impacted and sites located in adjacent areas, i.e., Rancho Cielo, Rancho Santa Fe, Black Mountain Ranch and 4S Ranch, make up a network of interaction covering the last 9,000 years.

The Harris site, CA-SDI-149, and the adjacent sites CA-SDI-316, CA-SDI-532/4.935A, and CA-SDI-4.935B are of particular importance. These four sites represent one of the few instances where archaeological sites meet all five CEQA criteria for designation as important cultural resources providing a stratigraphic sequence encompassing all three identified cultural complexes, provide the site type for the San Dieguito complex, as well as producing some of the oldest radiocarbon dates in the County and the State (Carrico et al. 1993). Not only have the sites contributed immeasurably to understanding the prehistory of the region, they are associated with a select group of the Far West's best respected

archaeologists that include Malcolm Rogers, Paul Ezell, and Claude Warren. The Santa Fe Valley Specific Plan and the Balcor Tentative Subdivision have worked to preserve important portions of these sites for the future. Preservation allows the sites to function as a location for the presentation and interpretation of our prehistoric heritage by both the professional archaeologist and the public at large. Future technological developments in archaeology will undoubtedly provide scientists opportunities to wrest additional important information from these preserved resources.

Cumulative impacts are, therefore, weighed with respect to the potential loss to the archaeological and general communities with attempts to preserve all or part of these non-renewable resources for the future. The Santa Fe Valley Specific Plan has attempted to balance the need for additional housing and recreation areas within the County with cultural resource preservation and data acquisition. The Santa Fe Valley Specific Plan project, as currently designed, presents such a balance. Although preservation of all important cultural resources would be ideal, large areas with a diversity of cultural resources have been set aside as open space in order to preserve the most important examples of these sites. These efforts, along with similar measures within adjacent areas of proposed development, have resulted in the determination that no significant cumulative impacts are associated with the project.

Visual Quality/Aesthetics

Some of the projects on the cumulative list given in Table 8-1 would require significant amounts of landform alteration because of the presence of canyons and/or steep slopes on the sites. These projects include the Santa Fe Valley SPA, 4S Ranch, Rancho Cielo, and portions of the City of San Diego NCFUA.

Visually, the area is dominated by large open spaces, their steep slopes, and uplands. Grading required for proposed developments in the cumulative project area would alter the existing upland landforms visible from the river valley. Cumulative visual impacts will be reduced by mitigation measures contained in the individual EIRs for the projects.

Development of the site will change its appearance from natural open space to a developed state. A significant visual quality impact would occur as a result of cumulative development, because of the loss of the regional undeveloped open space. The projects

proposed for the area are consistent in scale with the existing development patterns and the Community Plans for the area.

Traffic/Circulation

The traffic analysis prepared for Santa Fe Valley Specific Plan evaluated traffic impacts for the study area, which includes the jurisdictions of Carlsbad, Encinitas, and Solana Beach, communities within the City of San Diego (Rancho Peñasquitos, Rancho Bernardo, and the NCFUA), and the San Dieguito Community Plan area. Development of all approved or planned projects in the vicinity of the Santa Fe Valley SPA (Figure 8-1 and Table 8-1) in conjunction with implementation of the proposed SPA would contribute to a substantial increase in traffic volumes on the existing and future roadway network in the study area. Both short-term impacts on existing facilities and long-term impacts on expanded facilities are anticipated under buildout conditions. Impacts on circulation and access would be considered significant because of the addition of traffic to an already congested situation, as well as ultimate traffic congestion with regional growth of the area. The Santa Fe Valley Traffic Report's study area encompassed all of the projects included in this cumulative impacts discussion, and therefore analyzed the traffic impacts as they would occur from a cumulative perspective. Even with the transportation improvements planned for the area, congestion will still occur on Paseo Delicias, Via Del La Valle, Interstate 15, SR56, and the intersection of Rancho Bernardo Road at Bernardo Center Drive. This is considered a significant regional transportation impact. The City and County of San Diego will need to require and/or provide necessary transportation improvements for projects in the area.

Cumulative impacts to traffic and circulation are mitigated through payment of developer fees to provide improvements to both the regional and local circulation system. Developers will be required to construct onsite improvements associated with their development. In addition, payment of fair share fees is required of applicants to compensate for the additional traffic that would be generated from their developments, and that would use the regional circulation system.

Noise

Buildout of the proposed project is expected to result in an incremental increase to the noise environment along roadways linking the project to the surrounding communities. This increase is expected to be as high as 1 dBA along those roadways. Since variations in

roadway sound levels less than 2 dBA are not detectable to the human ear. the cumulative impact is not significant.

Sound levels along existing major roadways at noise sensitive receptors. may exceed applicable noise standards. The County and the surrounding cities maintain policies for new housing that require home builders to demonstrate that exterior and interior noise environments comply with the applicable standards. These policies also provide guidelines for noise mitigation at noise sensitive receptors for improvement of existing roadways.

Air Quality

Construction, vehicular, and small stationary source emissions from the projects contained within the cumulative impact area would incrementally contribute to the San Diego Air Basin's inability to attain federal and state air quality standards for ozone (O_3). Each project would also contribute additional carbon oxide (CO) particulate matter (PM_{10}) to the airshed. The magnitude of emissions associated with projects around the Santa Fe Valley SPA was not anticipated in the Required Air Quality Standards (RAQS) since the proposed development is higher in land density than that planned under the County and City General Plans.

Vehicular emissions from the buildout of the entire region would have a major impact on regional air quality since the traffic analysis showed that several roadways and intersections would operate at LOS D or worse. Cumulative vehicle trips to and from the cumulative planned land uses would emit pollutants that could adversely affect air quality. Moreover, CO is a localized problem that occurs when cumulative projects are likely to impact a roadway's LOS, and subject sensitive receptors to CO hot spots. Despite the implementation of trip reduction and conservation measures. cumulative significant impacts on local and regional air quality conditions are likely to occur. as all incremental additions of pollutants affect the region's ability to achieve compliance with state and federal standards.

The discrepancy between the Series 7 forecast and current growth levels in the County demonstrates that growth in the County is inconsistent with the RAQS. Unless a major decrease in the growth rate is experience before year 2010. it is reasonable to assume that the population density in 2010 will also exceed the assumptions in the RAQS. Therefore, significant cumulative impacts are expected to result from the Santa Fe Valley SPA, 4S

Ranch SPA. Rancho Cielo SPA. City of San Diego NCFUA. in conjunction with other projects mentioned in Section 8.2. as all of these project would generate stationary and vehicular emissions that would contribute significantly to the degradation of air quality.

Hydrology/Water Quality

The San Dieguito River and its tributaries (including Lusardi Creek) are the main surface water bodies in the project area. The San Dieguito Lagoon exists downstream from the project site. The proposed development of the SPA would result in substantial grading activities and drainage alteration, compaction of surficial deposits. and construction of impervious (paved) surfaces. These activities would likely produce changes to the quantity and velocity of runoff downstream from the project site. During construction, grading and other earthwork will render previously vegetated areas susceptible to erosion. thereby increasing sediment production and resulting in elevated rates of sediment deposition in drainages. Development of the SPA has the potential to decrease surface water quality downstream of the SPA. This would include short-term impacts related to construction activity (e.g. degradation of water quality as a result of construction-related sediment influx), long-term impacts as a result of residential development (e.g. an increase in urban pollutant runoff from impervious surfaces), and incremental increases in urban pollutant loading to downstream areas. However, cumulative hydrology/water quality impacts associated with construction activity would be temporary and short-term. Long-term cumulative impacts to hydrology/water quality would be minor and incremental on a regional scale. Therefore. while implementation of the SPA would cumulatively affect hydrology/water quality to downstream water bodies. significant cumulative impacts are not anticipated.

Geology/Seismicity/Soils

Any geotechnical impacts associated with development on surrounding properties would be site-specific. Geologic and soils impacts would be evaluated on the respective properties and on a project-by-project basis. Typical potential impacts in the project area include rippability. slope instability, liquefaction. landslides. and expansive soils. It is anticipated that potentially significant impacts would be mitigated by implementing standard excavation and construction methods.

Potentially significant cumulative impacts would result from construction of the Santa Fe Valley Specific Plan in conjunction with the surrounding projects. The proposed developments would result in an increase in population and property that would be exposed to the effects of seismic ground shaking from local active faults. All significant adverse geologic and soil related impacts such as landslides and expansive soils would be evaluated and prevented through appropriate site-specific excavation, construction, and design methods.

Cumulative impacts related to seismic ground shaking will be avoided by designing and constructing proposed projects in accordance with the Uniform Building Code (UBC), state-of-the-art seismic design parameters of the Structural Engineering Association of California (SEAOC), and applicable local building codes as required by local agencies. No additional measures are necessary for seismic effects.

Paleontological Resources

Development of the proposed project surrounding the Santa Fe Valley Specific Plan site would result in site-specific impacts to paleontological resources. The significance of these impacts would vary depending on the resource sensitivity of the rock formation to be affected by development. Potentially significant impacts would occur if proposed surrounding developments are constructed in rock formations of moderate or high paleontological resource sensitivity.

Development of the SPA in conjunction with the surrounding projects would result in an increased probability of disturbance to paleontological resources, thus causing potentially significant cumulative impacts. The positive cumulative effect of development would be the potential discovery of significant fossils which would otherwise go undiscovered and which could contribute important scientific information to San Diego County natural history.

Cumulative impacts to paleontological resources can be mitigated by implementation of the measures identified in Section 4.4-10 and any site-specific measures identified for surrounding developments.

Population/Demographics

The proposed project, together with other development projects in the area (refer to Table 8-1) would represent a cumulative increase of population in the San Diego region. However, with the exception of the proposed 4S Ranch project, the projects identified in Table 8-1, including the Santa Fe Valley Specific Plan, would be consistent with the general plans of their respective planning areas. The 4S Ranch project has not been approved to date, and would require a General Plan Amendment.

Socioeconomics

The socioeconomic impacts resulting from project implementation would have cumulatively beneficial effects to the San Diego region.

Public Facilities and Services

The projects listed in Table 8-1 would increase the overall demand for public services and utilities. The amount of development proposed for the area is generally planned to occur in conjunction with expansion or extension of the necessary services and infrastructure, thus, significant cumulative impacts would not occur. Mitigation measures, such as impact fees and the dedication of land for public services, are required for each proposed project to reduce impacts to public services and utilities.

SECTION 9
ALTERNATIVES TO THE PROPOSED PROJECT

Since a principal objective of the EIR process is to substantially reduce or avoid significant environmental damage where feasible, the information and level of analysis in such a disclosure document must be sufficient to permit a reasonable choice of alternatives regarding the environmental aspects of the proposal. A reasonable range of alternatives to the proposed project that could feasibly attain the project's basic objectives must be described, and the comparative merits of each must be evaluated (State CEQA Guidelines Section 15126 (d)). Accordingly, in addition to the proposed project, the No Project Alternative, and two alternative project plans were evaluated in this EIR. Discussion of these alternatives follows below.

9.1 ALTERNATIVE A - CLUSTERED WITH ANCILLARY USES

This alternative would not allow development in any areas of maximum and high environmental sensitivity as identified by the environmental constraints analysis done for Santa Fe Valley during Phase I of the specific planning process. Remaining areas would be developed. Figure 9-1 and Table 9-1 indicate the land use plan for Alternative A. The plan includes 1,970 acres of natural open space, a 7-acre commercial site; 892 acres of residential development, including 464 acres of very low-density residential development which would allow one dwelling unit per legal parcel. Ancillary uses including an 18-hole golf course, a resort, and community facilities similar to those included in the proposed project would also be constructed. This alternative would include a similar circulation system as the proposed project, but would include an alternative bridge crossing at San Dieguito River to provide access to Del Dios Highway across from Calle Ambiente (Ogden 1993).

Alternative A proposes that the areas of Santa Fe Valley adjacent to the residential development proposed within 4S Ranch and Black Mountain Ranch be developed at similar densities. The 4S Ranch project proposes three subareas abutting the southeast boundary of the Santa Fe Valley SPA. These subareas are planned for net densities ranging from 0.93 dwelling units per acre to 7.4 dwelling units per acre. The Black Mountain Ranch development includes two subareas which abut the southern boundary of the Santa Fe

Table 9-1

SANTA FE VALLEY ALTERNATIVE A - CLUSTERED WITH ANCILLARY USES

Land Use Category	Subtotal	Total Gross Acres	Dwelling Units (DUs)
Natural Open Space		1,970	
Recreational Open Space		233	
Golf Course	175		
Resort	24		
Equestrian Facility	7		
Driving Range	27		
Residential		892	992
Very Low Density (1 du/legal parcel)	464		
Low Density (1 du/acre)	260*		
High Density (4 du/acre)	168		
Neighborhood Commercial		7	
Community Facilities		61	
Neighborhood Park	13		
Fire Station	2		
Wastewater Treatment Plant	8		
Water Storage Facility	19		
Total Acres		3,163	

* Includes 12-acre elementary school and 30-acre middle school.

- Miller Fire Station 20.5 miles - 25 minutes
- Red Mountain Fire Station 26.6 miles - 31 minutes

These stations will mainly respond to wildland fires in the SPA and assist in vehicle and structural fires. Of these stations serving the Santa Fe Valley area, Valley Center Fire Station is the only station staffed year round.

Fire Management Policies

Fire management policies set forth by the Rancho Santa Fe Fire Protection District are based on the Uniform Fire Code. The Rancho Santa Fe Fire Protection District's policies with respect to new development, require a 20 to 30 feet vegetation clearing from each structure and an additional 70 to 80 feet of dry brush thinning beyond the cleared area (actual requirements may vary based on the type and location of the proposed development) for up to 200 feet of clearing and thinning (Willis 1994).

Funding Methods

Most revenue for fire protection agencies revenue comes from property taxes and the Special District Augmentation Fund, which is apportioned by the County. Additionally, in December of 1985, the County Board of Supervisors adopted a Fire Mitigation Fee program for districts in the unincorporated area. Under this program, districts providing fire protection may charge per-square-foot fees on new construction to mitigate for the impacts of new development of their facilities. These fees are collected by the County at the building permit stage, and distributed to the appropriate districts. Other sources of revenue for financing structural fire protection include: grants and loans, County Service Area Assessments, special taxes and benefit assessments. Mello-Roos bonds and general obligation bonds.

Specific Plan Area Impacts

Criteria for Significance Determination

A significant impact would occur if the project results in a substantial and unmet need for additional capacity of fire protection service and medical emergency service in order to

serve the project or if the project results in a substantial decrease in existing levels of fire protection service.

Fire Protection Service

Implementation of the proposed Santa Fe Valley project would generate additional demand for fire protection and emergency medical services beyond what is currently available for the area. Response times to the Santa Fe Valley project area would vary, depending on the ultimate circulation system in place outside of the boundaries of this project. In the current configuration, only the 4S Station has adequate service (a response time of 5 minutes) for the Santa Fe Valley SPA.

In 1994, the Rancho Santa Fe Fire Protection District and the known project proponents for development located in the eastern portion of the fire district (4S Ranch, Rancho Cielo, and Santa Fe Valley) participated in a comprehensive study in order to address future fire station needs and fire protection standards plans. The District attempted to identify a location for a single station that could adequately serve the three Specific Plan Areas for Rancho Cielo, Santa Fe Valley and 4S Ranch; however, the study concluded that a single site location could not adequately serve all three projects (Neville 1995).

The fire station site proposed as part of the Santa Fe Valley Specific Plan would be located at the northeast corner of Camino del Norte and East Loop Road. The permanent station would replace the temporary 4S station. The station would serve most of the Santa Fe Valley SPA, except for the northern portion, which would be served primarily by the proposed Rancho Cielo Station. The new Santa Fe Valley fire station facility would be equipped with one Type I structural fire truck, one Type II wildland fire truck, and one ambulance. It is anticipated that 10 full-time fire fighters will be employed at the station in Santa Fe Valley.

Final negotiations for the proposed station within the Santa Fe Valley SPA have not yet been completed with the District. However, the Rancho Santa Fe Fire District has stated that the 1.5-acre site is not adequate in size, but that a 1.8-acre site would be acceptable (Willis 1995). The size, funding, and timing of the construction of the station will have to be worked out by representatives of the property owners in Santa Fe Valley with representative of the District. Until these negotiations have been completed, impacts related to the issue of fire protection is considered significant.

Water Requirements

An adequate and reliable water supply is critical to fire protection in wildland-urban interface areas. According to the fire protection standards developed for the Santa Fe Valley Specific Plan, the water system shall provide a minimum of 2,500 gallons per minute (gpm) of fire flow to all portions of the project for 3 hours, in addition to peak domestic demands. Needed fire flow demands may exceed 2,500 gpm at the congregate care, multi-family occupancies, resort, other commercial areas, and the schools, based upon the occupancy, size, and construction. The Olivenhain Municipal Water District (OMWD) has indicated that they can meet these fire flow requirements, providing that off-site requirements such as water hydrants are constructed to meet the demands of the project (OMWD 1995).

Compliance with Applicable Policies

The Public Facilities Element of the Santa Fe Valley Specific Plan discusses the need for fire protection and emergency medical services. Objective PF-3 of the Specific Plan identifies the need to provide adequate fire protection facilities for Santa Fe Valley by dedicating a 1.5-acre fire station site within the SPA. Further, Policy PF-3.1 requires that prior to issuance of any discretionary permits, property owners shall obtain a positive "will serve" letter from the Ranch Santa Fe Fire Protection District and dedicate the 1.5-acre fire station site. However, the size of the site is not considered adequate by the Rancho Santa Fe Fire District.

Policy PF-4.1 of the Santa Fe Valley Specific Plan states that no discretionary permits may be approved in the Santa Fe Valley SPA until a Fire Management Plan is approved by the Rancho Santa Fe Fire Protection District, California Department of Forestry, U.S. Fish and Wildlife Service, California Department of Fish and Game, San Dieguito River Park Joint Powers Authority, and other participating agencies. A draft Fire Protection Standards Plan for the Santa Fe Valley Specific Plan is currently being reviewed by the County. The purpose of the Fire Protection Standards Plan is to establish fire protection standards for development to reduce the risk of significant loss of property, in the event of an uncontrolled wildfire (Hunt Research Corporation 1995). The plan also sets forth safeguards, policy compliance requirements and a process for review and approval of all proposed site specific development plans in the SPA by the Fire District and other

applicable agencies. Approval of this plan by the applicable agencies will be a condition of project tentative map approval. Project tentative map approval will require the payment of fees to fund fire protection service to the SPA.

Level of Significance

The project would represent a substantial demand for new fire protection facilities. The Specific Plan requires that development approvals be conditioned on adequate fire protection facilities and a Fire Management Plan be approved by the applicable agencies as a condition for project tentative map approval. However, the project's proposed fire station is not adequate in size to meet Rancho Santa Fe Fire District requirements. This represents a significant impact.

With the implementation of the mitigation measures, all impacts to fire protection services will be mitigated.

Mitigation Measures

As a condition of the discretionary approvals, each project applicant shall be required to obtain a "will serve" letter from the Rancho Santa Fe Fire Protection District. Discretionary approvals shall not be granted until the size, timing, and funding of a fire station on the SPA is accepted by the Rancho Santa Fe Fire Protection District. In compliance with Policy PF-4.1 of the Specific Plan, no discretionary permits will be approved in the Santa Fe Valley SPA until a Fire Management Plan is approved by the Rancho Santa Fe Fire Protection District, California Department of Forestry, U.S. Fish and Wildlife Service, the San Dieguito River Park Joint Powers Authority, and other participating agencies.

4.13.2 Law Enforcement

Existing Conditions

Law enforcement services for the Santa Fe Valley SPA are provided primarily by the County Sheriff's Department. Most of the project site is located within Sheriff's Beat Number 419, which is serviced from the Poway Station. The boundaries of Beat 419 are approximately at : : beginning of the split of San Dieguito River from Del Dios Highway; east along San Dieguito River to the San Diego City limit; continuing to Artesian Road;

Funding Methods

The primary funding mechanism for the provision of Sheriff's services in the unincorporated area is the San Diego County General Fund. The amount of funding available for the Sheriff's Department is set on an annual basis by the San Diego County Board of Supervisors. If additional funding or patrol officers are needed in this area, the Sheriff's Department must include a request for the funding, or justify the need for additional officers to the Board of Supervisors, who have the authority to provide the increased funding.

As stated in the Santa Fe Valley Specific Plan, in order to compensate for the need for existing and additional law enforcement services, the Santa Fe Valley property owners would be required to contribute to the San Diego County General Fund to the extent that the development results in a need for additional law enforcement services.

Level of Significance

Law enforcement impacts are not significant because of policies already in place in the San Diego County Public Facility Element the proposed policies in the Santa Fe Valley Specific Plan Area text and the ability of the San Diego County Sheriff's Department to request additional funding and/or patrol officers during annual budget deliberations at the San Diego County Board of Supervisors.

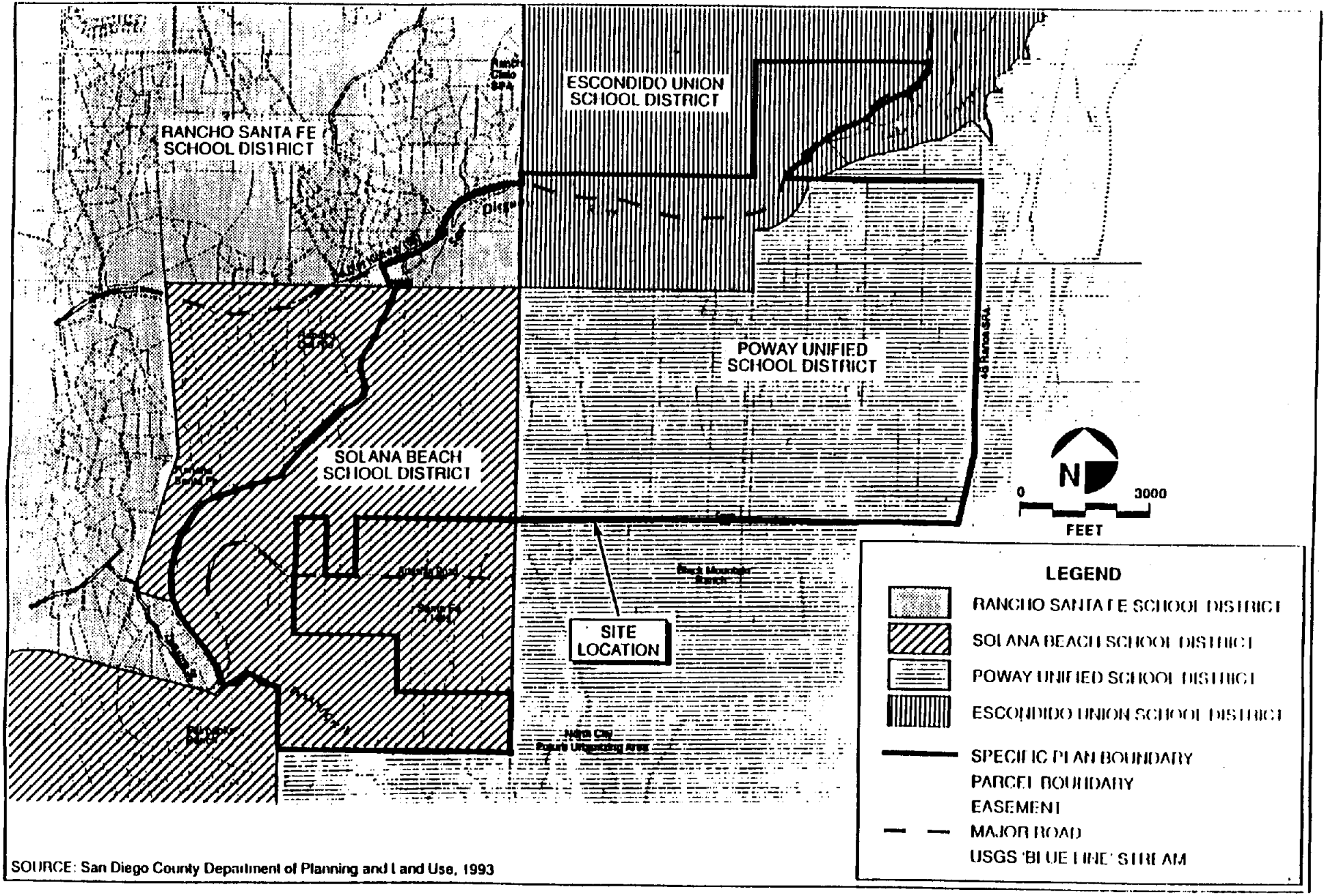
Mitigation Measures

Since no significant impacts were identified, no mitigation measures are necessary.

4.13.3 Schools

Existing Conditions

The Santa Fe Valley SPA falls within four school districts providing elementary (K-8) education (Poway Unified School District, Escondido Union School District, Rancho Santa Fe School District, and Solana Beach Elementary School District). Additionally, three high school districts (San Dieguito Union High School District, Escondido Union High School District, and Poway Unified School District) serve the SPA. Figure 4.13-2 depicts the



SOURCE: San Diego County Department of Planning and Land Use, 1993

OGDEN

Santa Fe Valley Elementary School Districts

FIGURE
4.13-2

existing elementary school district boundaries. and Figure 4.13-3 depicts the existing high school district boundaries in relation to the SPA.

School Districts within Santa Fe Valley SPA

Historically. increased enrollment has impacted the districts in North San Diego County and. as a result. districts are currently at or exceeding facility capacities. The facilities which would serve Santa Fe Valley students have limited capacity for additional students. Initial attempts to realign the school district boundaries as part of the Santa Fe Valley Specific Plan process in order to reduce school district fragmentation in Santa Fe Valley were not successful (County of San Diego 1995). The student generation rates for all of the districts are presented in Table 4.13-1 below.

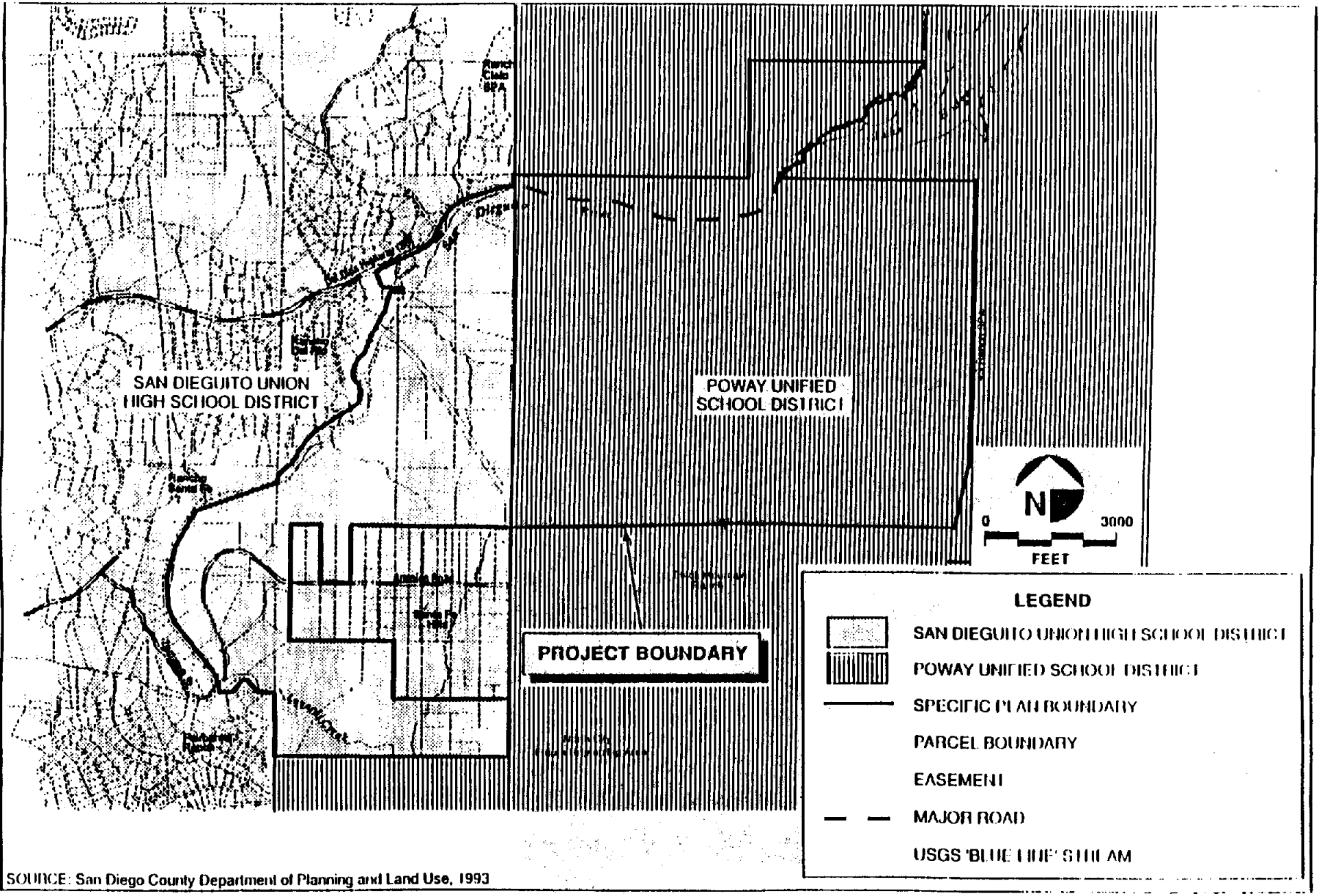
Table 4.13-1

EXISTING SCHOOL DISTRICTS WITHIN SANTA FE VALLEY SPECIFIC PLAN AREA STUDENT GENERATION RATES

District	Level	Single-family	Multi-family
Poway	Elementary School	0.34	0.175
	Middle School	0.18	0.07
	High School	0.26	0.10
Escondido	Elementary School	0.32	0.32
	Middle School	0.072	0.072
	High School	0.1363	N/A
Solana Beach	Elementary School	0.4519	0.0135
San Dieguito	High School	0.25	0.25
Rancho Santa Fe	Elementary School	0.33	N/A

Source: County of San Diego 1995

Rancho Santa Fe Elementary School District. Only a small portion of the Santa Fe Valley SPA falls within this district. The Rancho Santa Fe Elementary School District operates the 545-student Rancho Santa Fe Elementary School (Grades K-6) and the 120-student



SOURCE: San Diego County Department of Planning and Land Use, 1993

OGDEN

Santa Fe Valley High School Districts

FIGURE

4.13-3

Rancho Santa Fe Middle School (Grades 7-8). The elementary school is at capacity (Rowe 1992). Current student enrollment and school capacities for this district are not presented in this analysis because the limited student enrollment of 5 students within the Rancho Santa Fe District that is anticipated to be generated from this project.

Solana Beach Elementary School District. This district currently operates five elementary schools (Solana Highlands, Solana Santa Fe, Skyline, Solana Vista, and Carmel Creek). Carmel Creek Elementary School recently opened for service in September of 1994.

The District's Long-Range Facilities Master Plan was completed in June 1995 (Castanos 1995). The Master Plan was updated to determine if future school facilities will be needed. Currently, there are two future school facilities tentatively planned in the District. The current student enrollment generation rates for this District, presented in Table 4.13-1. Currently, three of the District's schools are over capacity (see Table 4.13-2) (Castanos 1995).

Table 4.13-2

SOLANA BEACH ELEMENTARY SCHOOL DISTRICT STUDENT ENROLLMENT AND CAPACITIES

School	Enrollment	School Capacity
Solana Highlands	499	486
Solana Santa Fe	392	378
Skyline	447	567
Solana Vista	395	486
Carmel Creek	413	459
Totals:	**2,146**	**2,376**

Source: Castanos 1995

Poway Unified School District. The Poway School District currently operates 19 elementary schools (K-5), five middle schools (6-8), three comprehensive high schools (9-12), and one continuation high school. The District comprises approximately 99.1 square miles in the central portion of San Diego County. The District serves a population of approximately 140,000 in five communities: the City of Poway, and the

communities of Rancho Bernardo, Rancho Peñasquitos, Carmel Mountain Ranch, and Sabre Springs, all of which are part of the City of San Diego (Kroese 1995). Enrollment for the 1994-1995 school year is expected to reach nearly 29,000 students.

All Poway School District schools within proximity to Santa Fe Valley are at or over capacity. The existing schools within closest proximity to the Santa Fe Valley SPA are Turtleback Elementary, Bernardo Heights Middle School, and Rancho Bernardo High School. Student enrollment and school capacities for the Poway School District are listed in Table 4.13-3.

San Dieguito Union High School District. San Dieguito Union High School District encompasses approximately 90 square miles stretching from portions of south Carlsbad in the north, to its southern boundary near the Los Peñasquitos Canyon Reserve, and eastward to border Poway and Escondido School Districts. This District educates students in middle and high school grades, and operates an extensive adult program. The District currently operates two schools: Torrey Pines High School for grades 9-12, and Earl Warren Junior High School for grades 7-8. The current enrollment and capacities for each of these schools are presented in Table 4.13-4.

Escondido Union School District. The District currently operates 20 schools: 5 of which are middle schools, 13 are elementary schools, and the remaining 2 are a pre-school and a special education school. Currently, Ricon, one of the District's middle schools, is under construction to be converted into a K-8 school. The closest existing school facilities to the Santa Fe Valley SPA is Miller Elementary School, Lawrence R. Green, and Del Dios Middle School (Thonson 1995). Current student enrollment and school capacities for this district are not presented in this analysis because of the limited student enrollment within the Escondido School District that is expected to be generated from this project.

Specific Plan Area Impacts

Criteria for Significance Determination

A significant impact would occur if the project results in a substantial need for additional educational facilities in order to serve the project.

Table 4.13-3

POWAY UNIFIED SCHOOL DISTRICT
STUDENT ENROLLMENT AND CAPACITIES

School	March 3, 1995 Enrollment	Fall 1995 Projections	School Capacity
Elementary School (K-5)			
Adobe Bluffs	526	533	686
Canyon View	725	675	702
Chaparral	785	809	585
Deer Canyon	530	540	697
Garden Road	721	705	577
Highland Ranch	867	949	685
Los Penasquitos	746	703	685
Midland	780	756	639
Morning Creek	794	880	695
Painted Rock	723	701	655
Park Village	855	980	722
Pomerado	734	710	672
Rolling Hill	534	571	755
Sundance	567	538	722
Sunset Hills	597	578	784
Tierra Bonita	755	770	780
Turtleback	743	753	695
Valley	734	726	759
Westwood	973	931	677
Total	**13,689**	**13,808**	**13,172**
Middle School (6-8)			
Bernardo Heights	1,672	1,594	1,344
Black Mountain	1,242	1,220	1,335
Meadowbrook	1,226	1,200	1,265
Mesa Verde	1,169	1,404	
Twin Peaks	1,776	1,831	1,245
Total	**7,085**	**7,249**	**5,189**
High School (9-12)			
Abraxas	375	324	230
Mt. Carmel	2,569	2,778	2,800
Poway	2,684	2,961	2,089
Rancho Bernardo	2,495	2,616	2,169
Total	**8,123**	**8,679**	**7,288**
Total K-12	**28,897**	**29,736**	**25,649**

Source: Kroese 1995

with County Ordinance 7966. which will include an impact fee requirement in order to alleviate any project impacts. Prior to finalization of recording the tentative maps for implementation of the Specific Plan. secured mitigation agreements must be signed and submitted to the County of San Diego.

Poway School District. As depicted in Table 4.13-5. the largest number of students (540 students) will be generated by the Santa Fe Valley Specific Plan project within this school district. which is already operating at or above capacity. In order to alleviate student capacity impacts to the Poway School District, two schools. a middle school. and an elementary school are proposed for part of the Santa Fe Valley Specific Plan. District staff has worked with County planning representatives. Santa Fe Valley property owners. and the California Department of Education in order to select the elementary school and middle school sites. The Santa Fe Valley Land Use Map (Figure 3-3) depicts the proposed locations within the Santa Fe Valley SPA for the two school facilities. Under Poway School District Policies 6.32 and 6.33, the optimum size for an elementary school site is a minimum of 10 net usable acres to serve approximately 700 students. and the optimum size for a middle school site is 25 net usable acres to accommodate approximately 1,250 students. Both of the schools proposed as part of the Santa Fe Valley Specific Plan meet these minimum standards.

In addition. the Poway School District has been working with the property owner of 4S Ranch to identify a high school site and two elementary school sites within the proposed 4S Ranch Specific Plan. The Specific Plan Area for 4S Ranch is located directly east of the Santa Fe Valley SPA. therefore if schools within the 4S Ranch SPA are built. they could potentially serve students generated from the Santa Fe Valley project.

It should also be noted. however. that in order to accommodate student capacity demands. the Poway School District is often required to distribute students among schools within the District that have adequate capacity for additional students. Therefore. the District cannot guarantee that students from Santa Fe Valley would be attending schools closest to their homes (Kroese 1995).

San Dieguito Union High School District. Approximately 60 students would be generated from the SPA in this district. Currently the individual tentative map applicants in the SPA are entering into secured mitigation agreements. in accordance with Ordinance 7966. with this District. which will include an impact fee requirement in order to alleviate project

impacts. Prior to recordation of final maps for the SPA, the secured agreements must be signed and submitted to the County of San Diego.

Escondido Unified School District. Only a small portion of the SPA is located within the Escondido Unified School District, so minimal students will be generated within this District (Table 4.13-5). However, the District has indicated that most of the schools within their District do not have the capacity to provide educational facilities to any students generated from Santa Fe Valley. Impact mitigation fees will be required under a secured mitigation agreement with each tentative map applicant as a condition of approval of any tentative maps.

Specific Plan Policies

The Santa Fe Valley Specific Plan includes objectives and policies under its Public Facilities Element that specifically pertain to educational facilities and the respective school districts that serve the SPA. Objective PF-1 requires all applicants to submit a positive "will serve" letter from all affected school districts indicating that agreements have been reached with that particular district to provide adequate educational facilities. As part of this objective, property owners are required to reach financing agreements for each project's (subdivision's) proportionate share of the cost of the needed school facilities and related needs pursuant to appropriate school board policies. In addition, developer contributions to offset the cost of additional temporary school facilities and/or providing school transportation to accommodate new development in Santa Fe Valley shall be required.

County of San Diego Ordinance No. 7966, referred to as the School Facilities Mitigation Ordinance, adopted in September 1991, requires the applicant to fully mitigate any impact the project would have on area schools. The purpose of this ordinance, enforced by the Board of Education, is to ensure that adequate educational facilities are available concurrently with new development resulting from legislative actions by the Board of Supervisors.

In order to meet the requirements of the School Facilities Mitigation Ordinance, applicants seeking approval of a legislative action, such as approval of the Santa Fe Valley Specific Plan, are required to meet with the affected school districts to determine the appropriate mitigation of the project's impacts on school facilities. In addition, the affected school district(s) are required to document the impact of the project resulting from the proposed

Specific Plan Area Impacts

Criteria for Significance Determination

A significant impact would occur if the project results in a substantial need for additional library services in order to serve the project.

Library Facilities

Implementation of the Santa Fe Valley Specific Plan would incrementally create additional demand for library services because of the ultimate population increase of 3,~~111~~ persons at build out. Based on the County's minimum acceptable facility goal of 0.35 square foot of floor area and 2.0 books per capita, the development of Santa Fe Valley could potentially create the need for 1,205 square feet of library space and approximately 6,888 books.

Funding Methods

In order to achieve the overall goal of the San Diego County General Plan which is to have sufficient libraries to meet the information and educational needs of the population served by the County library, certain funding mechanisms in relation to new development are enforced. Under the County of San Diego General Plan's Policy 2.2, (Section 9) for libraries, the County has established a funding program in conjunction with cities within the County's library service area to ensure that new development in these cities and the unincorporated area contributes its fair share to provide library facilities to serve new development.

Level of Significance

Although the project would not create a substantial additional demand for library services, the project does incrementally add to the demand in an area that is currently under serviced by the library system. This is considered an adverse, but not significant impact of the project. The County has already established a funding mechanism to fund library facilities in the County.

Mitigation Measures

Since no significant impact was identified, no mitigation is required.

4.13.5 Water Service

Existing Conditions

The Santa Fe Valley SPA is located within the Olivenhain Municipal Water District (OMWD). The OMWD currently serves an average population of 43,000 (OMWD 1995a). The existing Santa Fe Valley water distribution system is characterized by a 12-inch transmission main traversing the SPA from the north (near Del Dios Highway) to the south at the Second San Diego Aqueduct, OMWD connection No. 2. A 12-inch main also serves the eastern portion of the SPA.

Along the SPA's eastern boundary is an existing one million gallon water storage reservoir, known as the Golem Reservoir. A small booster pump station is located at the Golem Reservoir to serve a small area of higher ground to the north. The pump station also supplies the existing 40,000-gallon 4G Reservoir located near the top of the existing mountain (Del Dios Ridge). Water is supplied through an 8-inch pipeline.

The southwestern portion of the Santa Fe Valley SPA is served by gravity, via parallel water mains from the OMWD connection No. 2. The water distribution system has reduced pressure near the Lusardi Creek area.

OMWD imports 100 percent of all water used within OMWD's service area. Both domestic potable and raw (unfiltered) water are delivered via the San Diego County Water Authority's (SDCWA) Second Aqueduct. The pipelines within the Second Aqueduct right-of-way are designated as Pipelines 3 and 4. This Aqueduct transverses the Santa Fe Valley SPA in a southeasterly direction. OMWD's Connection No. 2, which primarily supplies water by gravity to the southwest, is connected to the Second Aqueduct. Only one user, the Del Mar Country Club Golf Course, is currently being served by the OMWD pipeline.

Pipeline No. 5 has been approved for construction beginning in 1995. This pipeline will be located along and primarily within the Second Aqueduct right-of-way. In the future, this pipeline is planned to distribute reclaimed wastewater. The OMWD is currently

making provisions for the use of reclaimed water that will potentially be supplied from the proposed Pipeline No. 5.

The SDCWA has recently completed the "Ramona Pipeline" that extends from the Second San Diego Aqueduct, through Rancho Bernardo, to the City of Poway and community of Ramona. This 57-inch pipeline is located adjacent to Artesian Road through the Santa Fe Valley SPA. OMWD has a ten million gallon water storage reservoir in 4S Ranch which is served from a temporary connection to the Ramona Pipeline.

The SDCWA developed an Urban Water Management Plan in 1992 to examine water demands through the year 2010, and to review options for supplying water. As part of this Plan, conservation and demand management techniques are presented as a favorable water resource option as SDCWA evaluates new resources. Best Management Practices (BMPs), are to be used in the prioritization of proven conservation measures that are to be implemented state-wide over a given period of time. A list of BMP measures is presented in the Plan and is divided into the following two categories: Public Information Programs and Water Use Efficiency Programs. Some examples of the Public Information Programs to be implemented include the following: literature handouts such as brochures and other publications prepared by SDCWA, public presentations on water conservation to students and other interested groups and ongoing school programs. Examples of Water Use Efficiency Programs as part of the BMPs contained within the Urban Water Management Plan include the following: water audits and incentive programs for residential and governmental customers, enforcement of water conserving plumbing fixture standards including requirement for ultra low flush toilets in all construction beginning January 1992, large landscape water audits and incentives, landscape water conservation requirements for new and existing commercial, industrial, institutional, governmental, and single and multi-family developments, and water waste prohibition.

In addition to water use efficiency programs, SDCWA has adopted a number of policies, model ordinances, and guidance documents to assist local agencies with water reclamation project implementation. For example, it is the policy of SDCWA that where reclaimed water use is allowed by law and available in sufficient quantities, reclaimed water shall be the sole water supply delivered (SDCWA 1992). Local agencies have adopted SDCWA-sponsored ordinances related to reclaimed water master planning and have conditioned new development projects to require reclaimed water irrigation systems.

Specific Plan Area Impacts

Criteria for Significance Determination

Significant impacts to water services would result if

- an interruption or disruption of water services occurs as a result of a physical displacement and subsequent relocation of water utility infrastructure. Such impacts would be considered significant if the result would be a direct long-term service interruption or permanent disruption of essential water utilities.

- the project would result in encroachments into existing pipeline rights-of-way.

- the project results in the substantial need for additional capacity of water infrastructure or the substantial need for additional services, or substantial alterations to water utility service areas in order to service the project.

- the project results in a substantial decrease in existing levels of service in the project area.

Potable Water Service Facilities

The provision and supply of future potable water was evaluated by OMWD in a 1993 Master Plan (OMWD 1993). This Master Plan was necessitated by the SDCWA requirement of water agencies to be independent of the aqueduct system for at least ten days. In order to meet this requirement, OMWD is planning a large wastewater reservoir and reclaimed water treatment plant northwest of the SPA know as the Olivenhain Water Storage Project. This project will provide 30 to 40 days of storage for the District. The OMWD has recently completed its Final Draft Master Plan for the Storage Project. This Master Plan specifies the location and sizing of water facilities needed to support the development planned in this area.

As concluded by the OMWD Master Plan, a number of water system facility improvements will be required to serve the area including Santa Fe Valley. The Santa Fe Valley Specific Plan specifies the onsite water facility improvements needed to accommodate the proposed development (Figure 4.13-4). These facilities were determined on the basis of gross

estimates of water demands applied to the SPA as a whole as well as development density projections.

OMWD has stated that they have adequate capacity planned to serve the Santa Fe Valley SPA and can commit to providing water service based on certain requirements (OMWD 1995b). These requirements include payment of capacity fees, as appropriate, and in accordance with a hydraulic analysis (es). A "will serve" letter has been provided by OMWD for areas of the SPA where tentative maps are proposed. However, additional onsite improvements as described below may be needed to serve the full buildout of the SPA.

Firstly, the existing 4G Reservoir is inadequate to support the proposed development in the eastern portion of the SPA at upper elevations. A new reservoir will be required to provide adequate fire and emergency storage. In addition, the existing pump station will most likely have to be upgraded or replaced (County of San Diego 1995).

The Golem Reservoir is also inadequate to support development proposed within the remaining areas of Santa Fe Valley. This reservoir will need to be replaced by a larger facility to support buildout of the project. OMWD is only able to marginally supply the Golem Reservoir because of large pressure losses in the existing water system. New water transmission mains will be required in the SPA to improve the supply to and from the Golem Reservoir (County of San Diego 1995).

In addition to onsite improvements, as the region develops, OMWD will need to increase the water supply to serve the Santa Fe Valley SPA and the 2,903-acre proposed 4S Ranch SPA. Major water transmission mains have been planned by OMWD to serve these developing areas. These and the above mentioned OMWD improvements will be evaluated under a separate CEQA analysis as part of the OMWD's master planning efforts.

Compatibility with Existing Pipelines

As seen in the Specific Plan Land Use Map (Figure 3-3) and the Balcor Tentative Map (Figure 3-7), the proposed land use adjacent to SDCWA's Second Aqueduct is designated Low Density residential (1 dwelling unit per 2.1-4 acres). No development is planned to occur within the existing right-of-way of the Second Aqueduct, except for the distinct locations where proposed roadways intersect with the Aqueduct. This issue is further

discussed in Section 4.1. Land Use for impacts related to the overlapping roadways. Since no development would occur within the Second Aqueduct right-of-way, no impacts related to construction, long-term service interruption, and encroachments onto right-of-way would occur to the Second Aqueduct.

Since the Ramona Pipeline extends from the Second Aqueduct, and continues through Rancho Bernardo following Artesian Road, no development from the Santa Fe Valley would encroach into the existing right-of-way to this pipeline. From the Second Aqueduct the Ramona Pipeline runs underneath Artesian Road where the road is adjacent, but outside of the Santa Fe Valley SPA, therefore no impacts to the Ramona Pipeline would result from buildout of Santa Fe Valley.

Specific Plan Policies

Objective PF-7 of the Public Facilities Element for the Santa Fe Valley Specific Plan, states to ensure domestic and reclaimed water is provided to Santa Fe Valley in accordance with County-wide and OMWD policies. The Specific Plan's policies pertaining to water service state that prior to approval of any final maps or permits, a water commitment letter must be obtained from OMWD. All discretionary permits are also required to be conditioned to reserve rights-of-way easements for water service facilities as indicated on the Santa Fe Valley Public Facilities Plan map.

Level of Significance

Although the project results in the need for additional capacity of water infrastructure and services, a "will serve" letter has been supplied by OMWD for the project and no discretionary permits would be granted without adequate water capacity and infrastructure. Therefore, impacts to water service are not significant.

Mitigation Measures

Since no significant impacts were identified, no mitigation is required.

4.13.6 Wastewater Service

Existing Conditions

The Santa Fe Valley SPA is currently not serviced by sewer facilities. Existing homes are served by septic tanks. The local soil has limited septic tank suitability (County of San Diego 1995).

Specific Plan Area Impacts

Criteria for Significance Determination

Significant impacts to water services would result if

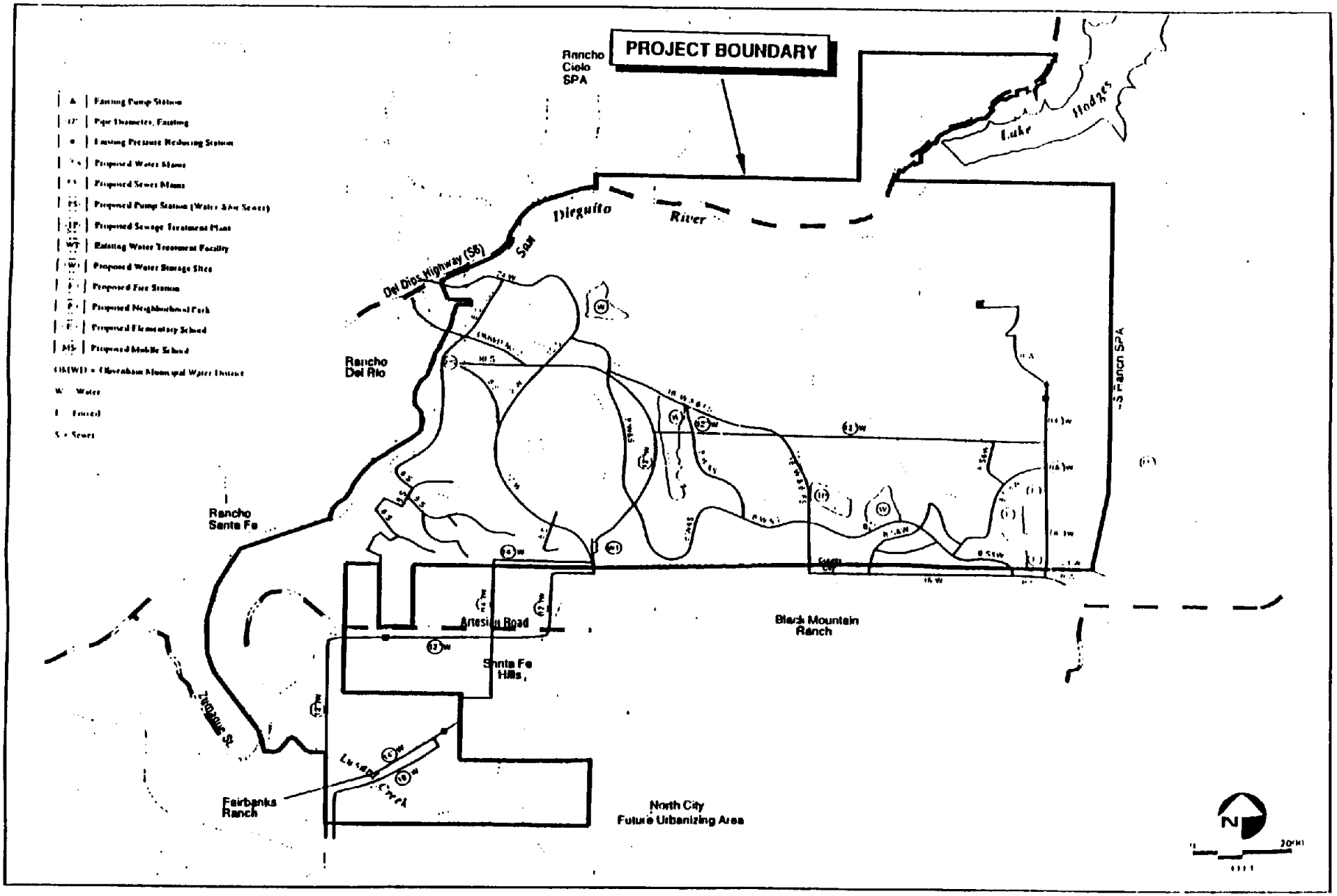
- the project results in substantial need for additional capacity of wastewater infrastructure or the substantial need for additional services, or substantial alterations to wastewater utility service areas in order to service the project.

- the project results in a substantial decrease in existing levels of service in the project area.

Wastewater Facilities

The Specific Plan proposes that the SPA be annexed to the Rancho Santa Fe Community Services District to provide wastewater collection and treatment. The current sphere of influence for the District currently does not include the Santa Fe Valley SPA, however, the District has indicated their ability to accommodate the entire wastewater treatment needs of the Santa Fe Valley SPA on two conditions. These two conditions are that the SPA must be annexed to the Rancho Santa Fe Community Services District subject to approval by the Local Area Formation Commission (LAFCO), and the land owners must enter into a service agreement with the District (Rancho Santa Fe Community Services District 1995). Currently, the District will be able to provide up to 300 EDU of interim sewer capacity to Santa Fe Valley (County of San Diego 1995).

The Specific Plan proposes a sewage treatment plant site within the SPA (Figure 4.13-4). Once constructed, this plant will be able to provide adequate treatment capacity for all



OGDEN

Proposed Infrastructure on the Santa Fe Valley

FIGURE

4.13-4

planned land uses in the SPA (County of San Diego 1995). Based on the Land Use Plan, the SPA is expected to generate approximately 470,470 gallons per day of wastewater flow, as described in Table 4.13-6. A pump station will be required for the interim sewer capacity. This pump station will also be required to utilize the treatment plant in Santa Fe Valley. This pump station could be sized to accommodate short term or ultimate flows generated from the SPA.

Reclaimed Water Facilities

During the dry season, the reclaimed water from the OMWD sewage treatment plant will be beneficially used for irrigating landscaped areas. However, in rainy seasons, the reclaimed water will need to be stored as a result of saturation of irrigated areas within Santa Fe Valley. A wet water storage facility sized to meet Santa Fe Valley's 90-day emergency storage requirements is proposed in the Santa Fe Valley SPA to meet San Diego Regional Water Quality Control Board criteria. The water storage facility is located in the Bernardo Lakes Tentative Map Area.

The estimated wastewater flows from Santa Fe Valley would generate approximately 1.5 feet-acre of reclaimed water per day at ultimate buildout of the SPA. During dry seasons this amount of water can be used for irrigation of landscaped areas and two proposed golf courses. However, during the rainy seasons, storage of the excess reclaimed water would be required which is estimated at 100 acre-feet. The proposed water storage facility on the SPA would be used to store this excess water.

Storm Water Facilities

Storm water runoff would increase with the development of the SPA. Accordingly, drainage facilities would be necessary to accommodate the stormwater flow in the developed areas. The Flood Control Division of the Department of Public Works would review the proposed development projects for conformance with all applicable policies, ordinances, and maps including the County hydrology manual, the County Design and Procedure Manual, and current floodplain maps.

The Clean Water Act regulates non-point source storm water pollution of the waters of the United States. In California, the Clean Water Act is administered by the State Water Resources Control Board, which issues Construction and Industrial Permits for the

Table 4.13-6

WASTEWATER GENERATION RATES FOR SANTA FE VALLEY SPA

Land Use Type	Amount of Development	Dwelling Unit Equivalent Factor	Total EDUs By Use	Gallons Per Day*
Residential	1,200 units	1.00	1,200.00	360,000
General Commercial	First 1,000 Sq. Ft.	1.20	1.2	360
General Commercial	46,000 Sq. Ft.	0.70	32.2	9,660
Restaurant	80 seats. 3,000 Sq. Ft.	1.00 per 6 seats	13.3	4,000
Resort Hotel	120 - 250 rooms	0.33	45.6 - 82.5	13,680 - 24,750
Golf Course	9 and 18 holes	3.00 – 5.00	3.0 – 5.0	900 – 1,500
Golf Course Clubhouse	17,000 – 30,000 Sq. Ft.	10.00 – 15.00	10.0 – 15.0	3,000 – 4,500
Elementary School	700 students	14.00	14.0	4,200
Neighborhood Park	13.6 acres	14.00	14.0	1,500
Congregate Care	200 rooms	1.00	200.0	60,000
Total	—	—	1,533 – 1,577.2	453,300 – 470,470

* Based on a dwelling unit equivalent of 300 gallons of reclaimed water per day.
Source: County of San Diego 1995.

discharge of storm water. The State Water Resources Control Board has identified the County to be responsible for storm water quality in the urbanized areas of the unincorporated County.

Specific Plan Policies

As part of the Specific Plan implementation. Objective PF-8 states to ensure that all public and private wastewater treatment and disposal facilities are provided to serve planned land uses in the SPA in advance of need in a timely and coordinated manner consistent with other elements of the Specific Plan.

Policies PF-8.1 through 8.7 of the Specific Plan allows septic sewer systems in the Rural and Very Low residential designations of the SPA to the extent they meet County Department of Health Services private sewage disposal standards. Policy PF-8.2 states that the Santa Fe Valley SPA shall annex to Rancho Santa Fe Community Services District prior to final approval of any development that would generate wastewater.

Prior to approval of any discretionary permits that would require public sewage treatment and disposal, tentative map applicants would be required to obtain a positive service letter from the Rancho Santa Fe Community Services District Board of Directors (per Policy PF-8.4 of the Specific Plan). Additionally, under Policy 8.5, required wet weather storage shall be provided to serve Santa Fe Valley by a single large reservoir subject to approval by the Rancho Santa Fe Community Services District Board of Directors. Policy 8.6 states that prior to any development, a wastewater treatment plant, collection system, and wet weather storage shall be constructed in conformity with the Santa Fe Valley Public Facilities Plan Map, as approved by the R...cho Santa Fe Community Services District Board of Directors.

Objective PF-9 of the Specific Plan ensures that storm water runoff would be planned and managed to protect houses and other structures from flooding; public health and safety would be protected from surface and ground water degradation; and wildlife habitats are protected from soil erosion and contamination. Policy PF-9.1 requires that all development applications within the SPA provide a review of post-development drainage peak flow rates, and remedial measures be implemented to prevent damage. Other policies require the construction and maintenance of onsite detention facilities, if needed; preparation of a Runoff Control Plan prior to approval of any site plan; and implementation of runoff and

erosion control techniques based on procedures outlined in the Flood Control Design and Procedure Manual. County of San Diego.

Under the Facilities Phasing. Financing and Implementation Element of the Santa Fe Valley Specific Plan. Policies FP-5.7. 5.8. and 5.9 address the financing requirements for the construction of water. wastewater. and reclaimed water transmission and collection lines by the property owners. Additional facilities will be financed by the property owners and dedicated to the OMWD and the Rancho Santa Fe Community Services District. Financing will be implementation through a combination of annexation and connection fees (County of San Diego 1995).

Level of Significance

Because the Rancho Santa Fe Community Services District has indicated their ability to provide wastewater treatment for the SPA and approval of any development on the SPA is conditioned on the provision of adequate wastewater capacity and infrastructure, impacts to wastewater are not considered significant.

Mitigation Measures

Since no significant impacts were identified. no mitigation is required.

4.13.7 Animal Control

Existing Conditions

The San Diego County Department of Animal Control provides services in the unincorporated area of the County. and by contract to the cities of Carlsbad. Del Mar. Encinitas. Lemon Grove. Poway. San Diego. San Marcos. Santee. Solana Beach. and Vista.

The Department operates three shelters (Central. North. and South County). The County's Public Facilities Element notes that the North County Shelter in Carlsbad. which is the closest to the Santa Fe Valley SPA. is the smallest of the three shelters. This shelter is currently operating above design capacity. providing animal control facilities at a service level of approximately 0.05 square foot of shelter space per dwelling unit served.

However, the County's Public Facilities Element requires facilities to provide 0.13 square foot of shelter space per dwelling unit.

Specific Plan Area Impacts

Criteria for Significance Determination

A significant impact would occur if the project results in a substantial need for additional animal control services in order to serve the project or if the project results in a substantial decrease in existing levels of animal control service.

Animal Control Facilities

Development of the Santa Fe Valley SPA would create additional demand for animal control services due to the increase of population. Santa Fe Valley residents would be served by the North County shelter. Since the North County facility is already operating below the County's Public Facility Element requirements, the additional demands for animal control services generated by Santa Fe Valley would impact available animal control service. Based on the buildout of 1,200 dwelling units, Santa Fe Valley would generate a demand for an additional 163 square feet of shelter space at the North County Shelter, using the County's standards (Parr 1994).

Funding Methods

In order to compensate for the additional animal control services generated by this project, the Department of Animal Control has determined that a developer impact fee of $41 to $44 per dwelling unit is required to finance the expansion of facilities to meet the additional service demands. The developer impact fee will be paid as a condition of approval of tentative maps.

Level of Significance

The Santa Fe Valley project would generate additional demand for animal control services in an already impacted district, and could potentially decrease the existing level of service. However, payment of the required developer impact fees would mitigate project impacts.

Mitigation Measures

Since no significant impacts are identified, no mitigation measures are required for animal control services.

4.13.8 Solid Waste

Existing Conditions

San Diego County is currently serviced by five sanitary solid waste landfills operated by San Diego County and one landfill operated by the City of San Diego. The sanitary landfills operated by the County of San Diego are administered by the County of San Diego Public Works Department, Solid Waste Division. These County-serviced, Class III landfills include the San Marcos Landfill, Sycamore Landfill, Otay Landfill, Ramona Landfill, and the Borrego Landfill. The City of San Diego sanitary landfill is administered by the City Waste Management Department and is located on leased Naval Air Station (NAS) Miramar property.

According to the County, the solid waste facility that would likely serve Santa Fe Valley is the San Marcos Landfill. This landfill is approximately 203 acres in size. The permitted capacity of the landfill is approximately 7 million cubic yards (Forsyfe 1995). However, the landfill's current Major Use Permit (MUP) expires in the year 2000 and is not expected to be renewed. If the San Marcos landfill is closed, then the Sycamore landfill would service the project area with a remaining permitted capacity of approximately 3 million cubic yards (Forsyfe 1995).

The San Diego region currently generates about 4 million tons per year (TPY) of solid waste, or approximately 1.3 tons per person per year. According to the most recent County Solid Waste Management Plan (CoSWMP), the County will exceed its remaining landfill capacity between 1998 and 2010.

There are currently two permanent Recyclable Household Hazardous Waste (HHW) Facilities located in the San Diego area. One facility is located in Coronado, and the other facility is located in Chula Vista.